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# **BMP Pilot Studies**

## **Quarterly Status Report No. 7**

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BMP Pilot Projects in District 7 and District 11

**CTSW-RT-99-087 December 3, 1999**

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## INTRODUCTION

### Background and Purpose

Periodic status reports and meetings are specified in the District 7 and District 11 Scoping Study as a vehicle to update NRDC, EPA, San Diego Baykeeper, and Santa Monica Baykeeper on the progress of the BMP Retrofit Pilot Program and receive input as to appropriate changes or modifications to the program. The bi-weekly and quarterly status meetings have been scheduled on a regular basis to coincide with general project milestones and periods of significant activity. Approximate scheduled dates for the periodic status meetings are given in the Scoping Study. This report provides background documentation for the seventh status meeting to be held on December 15, 1999.

The scope of the status reports includes a general program-level overview of the activities that precede the status meetings. Status reports include information regarding the Pilot Program 1) remaining construction, 2) OMM activities and preparation for the upcoming sampling, 3) vector and biological issues, and 4) other issues pertaining to the pilot study. The program Master Schedule is contained in the Scoping Study for each District.

The preceding Status Meeting (No. 6) was held on September 30, 1999. The meeting minutes are enclosed in Appendix A. The main issues discussed at Status Meeting No. 6 include the following:

- Non-stormwater Discharges
- La Costa Infiltration Basin
- Design/Construction status for remaining sites in District 7
- Vector Issues
- Environmental/Biological Issues
- Saltgrass Report
- Water Quality Monitoring Preparedness for Winter 1999 to 2000
- OMM Manual changes
- OMM Database
- Other Specific Device Issues

The project calendar listing meetings and submittals scheduled for the next few months is enclosed in Appendix H.

## QUARTERLY STATUS REPORT SUMMARY

Location	BMP Type	Site ID	OMM Consultant	Clearance Phase	Construction Phase	Instrumentation Phase	Monitoring Phase
<b>DISTRICT 7</b>							
I-605/SR-91	IB	73101	MW/Law				X
I-210 E. of Orcas	CDS	73102	MW/Law	X			
I-210 E. of Filmore	CDS	73103	MW/Law	X			
I-5/I-605	EDB	74101	BC				X
I-605/SR-91	EDB	74102	BC				X
Paxton Park & Ride	MF	74103	BC	X			
Metro MS	MCTT	74104	BC	X			
Alameda MS	OWS	74201	BC				X
Eastern MS	MF	74202	BC				X
Foothill MS	MF	74203	BC				X
Termination Park&Ride	MF	74204	BC				X
Via Verde Park&Ride	MCTT	74206	BC				X
Lakewood Park&Ride	MCTT	74208	BC				X
Altadena MS	Bio Strip/IT	73211a,b	MW/Law				X
Foothill MS	DII	73216	MW/Law				X
LasFlores MS	DII	73217	MW/Law				X
Rosemead MS	DII	73218	MW/Law				X
I-605/SR-91	Bio Strip/Swale	73222a,b	MW/Law				X
Cerritos MS	BioSwale	73223	MW/Law				X
I-5/I-605	BioSwale	73224	MW/Law				X
I-605/ Del Amo	BioSwale	73225	MW/Law				X
<b>DISTRICT 11</b>							
I-5/SR-56	EDB	111101	KLI				X
I-15/SR-78	EDB	111102	KLI				X
I-5/La Costa (West)	IB	111103	KLI	Suspended			
I-5/La Costa (East)	WB	111104	KLI				X
I-5/Manchester (East)	EDB	111105	KLI				X
Kearney Mesa MS	MF(StormFilter)	112201	KLI				X
Escondido MS	MF	112202	KLI				X
La Costa Park & Ride	MF	112203	KLI				X
SR-78/I-5 Park&Ride	MF	112204	KLI				X
Melrose Ave/SR-78	Bio Swale	112205	KLI				X
I-5 Palomar Airport Rd	Bio Strip	112206	KLI				X
Carlsbad MS	Bio Strip/IT	112207a,b	KLI				X

## NON-STORMWATER RUNOFF INSPECTIONS

Weekly inspections have been performed at the sites where non-stormwater runoff was previously noted. The following table summarizes when non-stormwater runoff were noted at the sites inspected.

Week of	Brown and Caldwell Sites – D7				Law Crandall Sites – D7					KLI Sites – D11						
	Foothill MS: SF	Alameda MS: OWS	5/605 EDB	Via Verde: MCTT	Foothill MS: DIIs	Las Flores MS: DIIs	Rosemead MS: DIIs	605/91: IB	Altadena MS: Strip/IT	15/78 EDB	Escondido MS: SF II	5/78 P&R: MF	5/56 EDB	Kearny Mesa MF	Palomar Bioswale	Carlsbad MS
July 12	N	-	-	-	N	N	N	N	Y	-	-	-	-	-	-	-
July 19	N	-	-	-	N	N	N	Y	Y	-	-	-	-	-	-	-
July 26	N	-	-	-	N	N	N	Y	Y	-	-	-	-	-	-	-
Aug 2	Y	-	-	-	Y	N	N	N	N	N	N	Y	Y	N	-	-
Aug 9	N	Y	Y	Y	N	N	N	N	Y	Y	N	Y	Y	N	-	-
Aug 16	N	N	Y	N	N	D	D	Y	Y	Y	N	N	Y	N	Y	-
Aug 23	Y	N	Y	N	Y	D	D	N	N	N	N	N	Y	N	Y	-
Aug 30	Y	N	N	N	N	D	D	N	Y	N	-	N	Y	N	Y	N
Sept 6	Y	N	Y	N	N	D	D	N	Y	N	Y	N	Y	-	Y	N
Sept 13	N	N	N	N	N	D	D	N	N	N	N	N	Y	-	Y	N
Sept 20	N	N	N	Y	N	D	D	N	N	N	N	N	Y	-	Y	N
Sept 27	N	N	N	Y	N	D	D	N	N	N	N	N	Y	-	Y	N
Oct 4	N	N	N	N	N	D	D	N	N	N	N	N	Y	N	Y	N
Oct 11	D	D	D	N	D	D	D	D	D	D	D	D	Y	N	N	D
Oct 18	D	D	D	N	D	D	D	D	D	D	D	D	Y	N	N	D
Oct 25	D	D	D	D	D	D	D	D	D	D	D	D	Y	N	Y	D
Nov 1	D	D	D	D	D	D	D	D	D	D	D	D	Y	D	Y	D
Nov 8	D	D	D	D	D	D	D	D	D	D	D	D	Y	D	Y	D
Nov 15	D	D	D	D	D	D	D	D	D	D	D	D	N	N	N	D
Nov 22	D	D	D	D	D	D	D	D	D	D	D	D	N	N	N	D
Nov 29	D	D	D	D	D	D	D	D	D	D	D	D	O	O	O	D

**Note:**

N – No evidence of non-stormwater runoff discharged into BMP

Y – Non-stormwater runoff was observed

- – No Inspection was held during the week.

D – Discontinued Inspections (no- non-stormwater discharge observed previous 4 weeks)

O – Has not been conducted at the time of preparation of this report.

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**ACTIVITY DESCRIBED IN THIS QUARTERLY REPORT COVERS THE PERIOD  
FROM  
SEPTEMBER 15 – DECEMBER 3, 1999**

**District 7 BMP Pilot Sites**

**I-605/SR-91 Interchange Infiltration Basin (Site ID 73101) MW/Law**

*Monitoring/Sampling Activities*

- 10/20/99: Monitoring equipment was checked for earthquake damage.
- 11/8/99: Storm event was forecasted to be "Unlikely" according to the Deployment Criteria and therefore, teams did not mobilize. At the end of the storm event, which produced 0.09 inch of rain, the IB was observed to be dry.
- 11/15/99: Storm event was forecasted to be "Unlikely" according to the Deployment Criteria and therefore, teams did not mobilize. Storm event produced less than 0.10 inch of rain.
- 11/20/99: Storm event was forecasted to be "Unlikely" according to the Deployment Criteria and therefore, teams did not mobilize. Storm event produced less than 0.10 inch of rain.

*Operations and Maintenance*

- Weeks of September 26, October 3 and October 10: Set traps for gophers in fresh burrows.
- 10/20/99: Conducted monthly inspection, removed trash, and flattened burrows.
- 10/29/99: Removed woody vegetation.
- 11/28/99 (week of): Contract with hydroseeder was signed. Site was scarified with hydroseeding scheduled for the week of 12/6/99.

*Vector Activities*

- None noted during routine inspections.

*Issues / Solutions*

- Contractor grouted the sump of the overflow box to eliminate standing water during the week of 9/27/99.

## I-210/East Orcas Avenue Continuous Deflection Separators (Site ID 73102)

MW/Law

## I-210/East of Filmore Street Continuous Deflection Separators (Site ID 73103)

MW/Law

### *Status*

The two CDS Pilots are being processed by the Santa Ana Business Center. The following eleven bids were opened on 11/16/99. The CDSs will be awarded the week of 12/6/99 to the lowest bidder.

<b>Bidder</b>	<b>Bid Amount</b>
UNITED STORM WATER, INC.	\$47,263.50
PETERSON-CHASE GENERAL ENG. CONST.	\$60,555.00
GUENO DEVELOPMENT CO., INC.	\$63,999.00
4-CON ENGINEERING, INC.	\$71,355.00
METROPOLE	\$74,310.00
TANGENT TECHNOLOGY, INC.	\$78,955.00
A & R CONSTRUCTION CORP.	\$80,990.00
BEADOR CONSTRUCTION CO., INC.	\$81,825.50
COLICH & SONS	\$87,311.00
JOHN ZGRABLICH CONSTRUCTION	\$103,000.00
ZOUDINOS CORP	\$116,000.00
ENGINEERS ESTIMATE	\$83,159.50

The two CDS units were pre-purchased and are scheduled to be delivered to the Altadena Maintenance Station for storage around Dec. 15, 1999.

The two fiberglass flume structures were pre-purchased and were delivered to the Altadena Maintenance Station for storage on December 1, 1999.

## *Schedule*

### **Preliminary Design/Construction Schedule for CDS Units – PS&E Process**

<b>Activities</b>	<b>Scheduled Dates</b>	<b>Actual Dates</b>	<b>Duration (calendar weeks)</b>
Obtain EA	06/01/99	06/04/99	
Begin Clearance	06/21/99	06/28/99	
Obtain District Clearances/To Santa Ana	07/26/99	09/14/99	4
End Santa Ana Review, Advertise, and Bid Opening	12/07/99	11/16/99	12
Award Contract	12/14/99		4
Begin Construction	01/11/00		4
Complete Construction	02/22/00		6
Fully Operational	03/07/00		2

## **I-5/I-605 Extended Detention Basin -Lined (Site ID 74101) Brown and Caldwell**

### *Monitoring/Sampling Activities*

November 9: The small storm of November 7-8 did not meet the mobilization criteria. However, empirical observations were taken during the post-storm inspection. Rainfall total was 0.17 inches. Standing water in the basin was not observed. Another storm that did not meet the mobilization criteria arrived November 19-20, which produced a total rainfall of 0.01 inches.

### *Operation and Maintenance*

October 5: Monthly site inspection was conducted for October.

November 3: Monthly site inspection was conducted for November; a flat strip of bare soil at the toe of the I-5 freeway, outside of the basin (east side) was hydroseeded.

November 9: A site inspection was again conducted for November due to rainfall the previous day.

### *Vector Activities*

The monitoring effort of 9/16/99 found breeding occurring in the EDB. The outlet structure of the EDB was treated with Altosid liquid on 9/17/99.

### *Issues/Solutions*

None this period.

## I-605/SR-91 Extended Detention Basin – Unlined (Site ID 74102) BC

### *Monitoring/Sampling Activities*

November 9: The storm of November 7-8 did not meet the mobilization criteria. However, empirical observations were taken during the post-storm inspection. Rainfall total was 0.09 inches. Standing water in the basin was not observed. Another storm that did not meet mobilization criteria arrived November 19-20, which produced a total rainfall of 0.01 inches.

### *Operations and Maintenance*

October 5: Monthly site inspection was conducted for October

October 13: The leak in the influent conveyance piping was repaired and tested. The test showed that the leak was eliminated.

November 2: The battery for the cell phone was replaced due to a low charge causing loss of communication.

November 3: Monthly site inspection was conducted for November; the basin and some bare areas of the slope were hydroseeded.

November 9: A site inspection was again conducted for November due to rainfall the previous day

### *Vector Activities*

None this period.

### *Issues / Solutions*

None this period.

## Paxton Maintenance Station Media Filter (Site ID 74103) BC

## Metro Maintenance Station Multi-Chamber Treatment Train (Site ID 74104) BC

### *Status*

Both Paxton and Metro plans and specifications are moving forward to District clearance. Final activity strictly relates to structural issues before the District releases to District Office Engineer (OE.) A conference call was held on 11/8/99 with HQ/Structures for coordination. Brown and Caldwell has submitted data to HQ Structures on 11/24/99. Revisions and comments are due back to Brown and Caldwell and the District on 12/22/99. Revisions are due back to HQ Structures, assuming the project is complete, it is anticipated that sites are ready to be sent to HQ OE on 1/7/99.

*Schedule*

**Design/Construction Schedule for Paxton PR Media Filter**

<b>Activities</b>	<b>Scheduled Dates</b>	<b>Actual Dates</b>	<b>Duration (calendar weeks)</b>
Obtain EA	06/01/99	07/15/99	
Begin Clearance Process	06/28/99	07/16/99	
Obtain District Clearances/to Dist OE	07/16/99	To be revised	
Obtain District OE Approval/to HQ	10/22/99	To be revised	
End HQ Review, Advertise & Bid Opening	01/14/00		12
Award Contract	02/11/00		4
Begin Construction	03/10/00		4
Complete Construction	06/30/00		16
Fully Operational	07/14/00		2

**Design/Construction Schedule for Metro MS MCTT**

<b>Activities</b>	<b>Scheduled Dates</b>	<b>Actual Dates</b>	<b>Duration(calendar weeks)</b>
Obtain EA	06/01/99	06/16/99	
Begin Clearance Process	06/28/99	07/02/99	
Obtain District Clearances/ To Dist OE	07/30/99	To be revised	4
Obtain District OE Approval/to HQ	10/15/99	To be revised	4
End HQ Review, Advertise & Bid Opening	01/07/00		12
Award Contract	02/04/00		4
Begin Construction	03/03/00		4
Complete Construction	06/23/00		16
Fully Operational	07/07/00		2

**Alameda Maintenance Station Oil/Water Separator (Site ID 74201) BC**

*Monitoring/Sampling Activities*

November 9: The storm of November 7-8 did not meet the mobilization criteria. However, empirical observations were taken during the post-storm inspection. Rainfall total was 0.38 inches. Another storm that did not meet mobilization criteria arrived November 19-20, which produced a total rainfall of 0.11 inches.

*Operations and Maintenance*

October 4: Monthly site inspection was conducted for October.

November 3: Monthly site inspection was conducted for November.

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November 9: A site inspection was again conducted for November due to rainfall the previous day.

*Vector Activities*

None this period.

*Issues / Solutions*

None this period.

Eastern Maintenance Station Media Filter (Site ID 74202) BC

*Monitoring/Sampling Activities*

November 9: The storm of November 7-8 did not meet the mobilization criteria. However, empirical observations were taken during the post-storm inspection. Rainfall total was 0.15 inches, which produced approximately 0.1 inches of standing water in the sedimentation basin. Another storm that did not meet mobilization criteria arrived November 19-20, which produced a total rainfall of 0.01 inches.

*Operations and Maintenance*

October 4: Monthly site inspection was conducted for October.

November 3: Monthly site inspection was conducted for November; a small tear in the mosquito netting covering the sump was repaired.

November 9: A site inspection was again conducted for November due to rainfall the previous day.

*Vector Activities*

None this period.

*Issues / Solutions*

None this period.

Foothill Maintenance Station Media Filter (Site ID 74203) BC

*Monitoring/Sampling Activities*

November 9: The storm of November 7-8 did not meet the mobilization criteria. However, empirical observations were taken during the post-storm inspection. Rainfall total was 0.10 inches. Standing water in the basin was not observed. Another storm that did not meet the mobilization criteria arrived November 19-20, which produced a total rainfall of 0.05 inches.

### *Operations and Maintenance*

October 4: Monthly site inspection was conducted for October.

November 3: Monthly site inspection was conducted for November.

November 9: A site inspection was again conducted for November due to rainfall the previous day.

### *Vector Activities*

None this period.

### *Issues / Solutions*

On November 17, 1999, BC received the new software from American Sigma after it was released from their QA/QC testing. Installation and independent QC testing is scheduled for early December.

## Termination Park and Ride Media Filter (Site ID 74204) BC

### *Monitoring/Sampling Activities*

November 9: The storm of November 7-8 did not meet the mobilization criteria. However, empirical observations were taken during the post-storm inspection. Rainfall total was 0.15 inches, and approximately 0.5 feet of stormwater accumulated in the sedimentation basin. Another storm that did meet the mobilization criteria arrived November 19-20, which produced a total rainfall of 0.05 inches.

### *Operations and Maintenance*

October 5: Monthly site inspection was conducted for October.

November 3: Monthly site inspection was conducted for November.

November 9: A site inspection was again conducted for November due to rainfall the previous day.

### *Vector Activities*

The monitoring effort of 10/6/99 found breeding occurring at the site. The site was treated on 10/7/99. Breeding was observed on 11/23/99 and was treated with Altosid liquid on 11/24/99.

### *Issues / Solutions*

None this period.

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## Via Verde Park and Ride Multi-Chamber Treatment Train (Site ID 74206) BC

### *Monitoring/Sampling Activities*

November 9: The storm of November 7-8 did not meet the mobilization criteria. However, empirical observations were taken during the post-storm inspection. Rainfall total was 0.14 inches, and approximately 2 inches of stormwater accumulated in the transfer sump of the main settling chamber. Another storm that did not meet the mobilization criteria arrived November 19-20, which produced a total rainfall of 0.03 inches.

### *Operations and Maintenance*

October 4: Monthly site inspection was conducted for October.

November 3: Monthly site inspection was conducted for November.

November 9: A site inspection was again conducted for November due to rainfall the previous day.

### *Vector Activities*

Monitoring efforts of 9/28/99 and 10/29/99 found breeding occurring at the MCTT. The MCTT was treated with Altosid pellets on 9/29/99 and 11/1/99.

### *Issues / Solutions*

BC (together with Caltrans, RBF and LWA) met with DHS and representatives from the Greater Los Angeles County Vector Control District and San Gabriel Valley Mosquito & Vector Control District on October 26 to discuss problems associated with monitoring and abating the Multi-Chambered Treatment Train BMPs which include this site.

Reuben Junkert (DHS) is to submit a letter of recommendations regarding MCTT design modifications to improve vector monitoring and abatement capabilities. BC will estimate level of effort, scheduling, and cost to address the recommendations proposed.

## Lakewood Park and Ride Multi-Chamber Treatment Train (Site ID 74208) BC

### *Monitoring/Sampling Activities*

November 9: The storm of November 7-8 did not meet the mobilization criteria. However, empirical observations were taken during the post-storm inspection. Rainfall total was 0.17 inches. Another storm that did not meet the mobilization criteria arrived November 19-20, which produced no recordable rainfall.

### *Operations and Maintenance*

October 4: Monthly site inspection was conducted for October.

November 3: Monthly site inspection was conducted for November.

November 9: A site inspection was again conducted for November due to rainfall the previous day.

November 30: Hicks Electric (subconsultant to Neilsen Construction) installed the buck/boost transformers to increase the voltage at the BMP pedestal for providing sufficient power to run the sump pumps.

#### *Vector Activities*

The monitoring efforts of 9/16/99 and 11/23/99 found breeding occurring in the MCTT. The site was treated with Altosid pellets on 9/17/99 and Altosid liquid on 11/24/99.

#### *Issues / Solutions*

BC will conduct QC testing of the pump system at Lakewood to insure that it is adequate. This will involve observing the pumps moving potable water from the main settling chamber to the media filter and transferring the treated water out into the storm drain.

BC, together with DHS and VCD representatives, are collaborating on solutions to problems associated with monitoring and abating the Multi-Chambered Treatment Train BMPs which include this site. See Via Verde discussion above.

### **Altadena Maintenance Station Bio Strip and Infiltration Trench (Site ID 73211 a, b) MW/Law**

#### *Monitoring/Sampling Activities*

10/1/99 through 12/3/99: Data was downloaded from the monitoring equipment.

10/21/99: Monitoring equipment was checked for earthquake damage.

11/9/99: Storm event on 11/8/99 was forecasted to be "Unlikely" according to the Deployment Criteria and therefore, teams did not mobilize. At the end of the storm event, which produced 0.19 inch of rain, the site was inspected and standing water was observed in the Strip's spreader ditch. The influent flow meter recorded 391 cubic feet of runoff discharging into the Strip and the effluent flow meter recorded 19 cubic feet of runoff discharging from the Strip into the Infiltration Trench.

11/15/99: Storm event was forecasted to be "Unlikely" according to the Deployment Criteria and therefore, teams did not mobilize. Storm event produced less than 0.10 inch of rain.

11/20/99: Storm event was forecasted to be "Unlikely" according to the Deployment Criteria and therefore, teams did not mobilize. Storm event produced less than 0.10 inch of rain.

### *Operations and Maintenance*

9/15/99 through 12/3/99: Watered the Strip in accordance with Margot Griswold's recommended schedule. Site is currently being watered 1x/2 weeks.

10/6/99: Coordinated pick-up and removal of two drums of sediment. Sediment was removed from the Strip's spreader ditch.

10/21/99: Conducted monthly inspection and removed a small amount of Bermuda grass.

11/17/99: Vegetation was cut to an average height of 6 inches in accordance with the MID.

11/29/99: Removed pine needles and leaves from the Strip's spreader ditch.

### *Vector Activities*

None noted this period.

### *Issues / Solutions*

Enlarged the spreader ditch drain plug to 6 inches during the week of 9/27/99.

## **Foothill Maintenance Station Drain Inlet Insert (StreamGuard and Fossil Filter Inserts) (Site ID 73216 a, b) MW/Law**

### *Monitoring/Sampling Activities*

10/1/99 through 12/3/99: Data was downloaded from the monitoring equipment.

10/21/99: Monitoring equipment was checked for earthquake damage.

11/8/99: Storm event was forecasted to be "Unlikely" according to the Deployment Criteria, however, because actual rainfall amounts appear to be greater than forecasted a skeleton crew was mobilized. Total rainfall of 0.10 inch was recorded at the site.

Fossil Filter DII: Sampling equipment was turned on and empirical observations were made. Low flow entered the DII and bypass was not observed. Rubber berming effectively prevented runoff from entering the monitoring vault. DII did not require cleaning before, during, or after storm event. Not enough sample was collected for analysis.

StreamGuard DII: Sampling equipment was turned on and empirical observations were made. Low flow entered the DII and bypass was not observed. Rubber berming effectively prevented runoff from entering the monitoring vault. DII did not require cleaning before, during, or after storm event. Not enough sample was collected for analysis.

- 11/12/99: Cleaned flumes in preparation of storm forecasted to occur on 11/14 through 11/15.
- 11/15/99: Storm event was forecasted to be "Unlikely" according to the Deployment Criteria and therefore, teams did not mobilize. Storm event produced less than 0.10 inch of rain.
- 11/20/99: Storm event was forecasted to be "Unlikely" according to the Deployment Criteria and therefore, teams did not mobilize. Storm event produced less than 0.10 inch of rain.

#### *Operations and Maintenance*

- 10/21/99: Conducted monthly inspection. Leaves and debris were removed from the Fossil Filter DII, and leaves were removed from the StreamGuard DII.
- 11/12/99: Conducted a pre-storm inspection of the DIIs. No maintenance required.

#### *Vector Activities*

None noted during routine inspection.

#### *Issues / Solutions*

None this period.

### Las Flores Maintenance Station Drain Inlet Insert (StreamGuard and Fossil Filter Inserts) (Site ID 73217 a, b) MW/Law

#### *Monitoring/Sampling Activities*

- 10/1/99 through 12/3/99: Data was downloaded from the monitoring equipment.
- 10/6/99: Re-installed and calibrated monitoring equipment at the StreamGuard DII location.
- 10/21/99: Monitoring equipment was checked for earthquake damage.
- 11/9/99: Storm event on 11/8/99 was forecasted to be "Unlikely" according to the Deployment Criteria and therefore, teams did not mobilize. Total rainfall of 0.48 inches was recorded at the site.

Fossil Filter DII: At the end of the storm event, the site was inspected and sediment had collected in the DII. No gaps were observed between the DII and drain inlet box and the monitoring vault berm was intact.

StreamGuard DII: At the end of the storm event, the site was inspected and some sediment had collected in the DII. No gaps were observed between the DII and drain inlet box and the monitoring vault berm was intact

- 11/12/99: Cleaned flumes in preparation of storm forecasted to occur on 11/14 through 11/15.
- 11/15/99: Storm event was forecasted to be "Unlikely" according to the Deployment Criteria and therefore, teams did not mobilize. Storm event produced less than 0.10 inch of rain.
- 11/20/99: Storm event was forecasted to be "Unlikely" according to the Deployment Criteria and therefore, teams did not mobilize. Storm event produced less than 0.10 inch of rain.

#### *Operations and Maintenance*

- 10/21/99: Conducted monthly inspection and removed leaves from the Fossil Filter and StreamGuard DIIs.
- 11/9/99: Removed sediment from the Fossil Filter DII.
- 11/12/99: Conducted a pre-storm inspection of the DIIs. Sediment was removed from the Fossil Filter DII in accordance with the MID.

#### *Vector Activities*

The service agreement with the Los Angeles County West Vector Control District has been accepted by both the District's Board of Directors and Montgomery Watson - Chaudhary. On December 1, LACWVCD personnel were given a tour of the site. Monitoring is expected to commence the week of December 6.

#### *Issues / Solutions*

Week of 10/4/99: Contractor relocated equipment pad. Relocation was performed as a result of a District request to not have the equipment enclosure partially block a window.

### Rosemead Maintenance Station Drain Inlet Insert (StreamGuard and Fossil Filter Inserts) (Site ID 73218 a, b) MW/Law

#### *Monitoring/Sampling Activities*

- 10/1/99 through 12/3/99: Data was downloaded from the monitoring equipment.
- 10/21/99: Monitoring equipment was checked for earthquake damage.
- 11/8/99: Storm event was forecasted to be "Unlikely" according to the Deployment Criteria, however, because actual rainfall amounts appear to be greater than forecasted a skeleton crew was mobilized. Total rainfall of 0.12 inch was recorded at the site.  
  
Fossil Filter DII: Sampling equipment was turned on and empirical observations were made. Low flow entered the DII and bypass was not observed. Rubber berming effectively prevented runoff from entering the monitoring vault. Sediment and debris had collected in the DII before and during the storm event. Subsequently,

the DII was cleaned before, once during the storm event, and once after storm event in accordance with the MID. Not enough sample was collected for analysis.

StreamGuard DII: Sampling equipment was turned on and empirical observations were made. Caltrans had constructed a berm made of sand in front of the DII. Sand berming held back runoff initially but then break-through occurred allowing runoff and sand to discharge into the DII. Approximately 2.5 inches of sand was entrapped in the DII and more passed through the DII and deposited in the downstream flume (see Issues/Solutions). Flow rate entering the DII was low and bypass was not observed. DII did not require cleaning before, during, or after storm event. Not enough sample was collected for analysis. Rubber berming effectively prevented runoff from entering the monitoring vault.

- 11/12/99: Cleaned flumes in preparation of storm forecasted to occur on 11/14 through 11/15.
- 11/15/99: Storm event was forecasted to be "Unlikely" according to the Deployment Criteria and therefore, teams did not mobilize. Storm event produced less than 0.10 inch of rain.
- 11/20/99: Storm event was forecasted to be "Unlikely" according to the Deployment Criteria and therefore, teams did not mobilize. Storm event produced less than 0.10 inch of rain.

#### *Operations and Maintenance*

10/21/99: Conducted monthly inspection. Leaves, trash, and sediment were removed from the Fossil Filter DII, and leaves were removed from the StreamGuard DII.

11/8/99: Fossil Filter DII was cleaned before, once during the storm event, and once after storm event in accordance with the MID.

11/12/99: Conducted a pre-storm inspection of the DIIs. Sediment and debris was removed from the Fossil Filter DII.

#### *Vector Activities*

Monitoring effort of 11/18/99 found breeding occurring in the flume housing of the Drain Inlet Insert. The Drain Inlet Insert was treated with Altosid pellets on 11/19/99.

#### *Issues / Solutions*

The previously constructed sand berm was removed and the area has been cleaned.

### **I-605/SR-91 Interchange Bio Strip & Swale (Site ID 73222 a, b) MW/Law**

#### *Monitoring/Sampling Activities*

Strip:

10/5/99: Reinstalled and calibrated monitoring equipment at the Strip effluent location.

10/20/99: Monitoring equipment was checked for earthquake damage.

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- 11/8/99: Storm event was forecasted to be "Unlikely" according to the Deployment Criteria and therefore, teams did not mobilize. At the end of the storm event, which produced 0.09 inch of rain, the Strip was observed not to have any areas of channelization or ponding.
- 11/15/99: Storm event was forecasted to be "Unlikely" according to the Deployment Criteria and therefore, teams did not mobilize. Storm event produced less than 0.10 inch of rain.
- 11/20/99: Storm event was forecasted to be "Unlikely" according to the Deployment Criteria and therefore, teams did not mobilize. Storm event produced less than 0.10 inch of rain.

**Swale:**

- 10/20/99: Monitoring equipment was checked for earthquake damage.
- 11/8/99: Storm event was forecasted to be "Unlikely" according to the Deployment Criteria and therefore, teams did not mobilize. At the end of the storm event, which produced 0.09 inch of rain, the Swale was observed not to have any areas of channelization or ponding. It appeared that runoff only traveled through the first 3rd of the swale and then infiltrated.
- 11/15/99: Storm event was forecasted to be "Unlikely" according to the Deployment Criteria and therefore, teams did not mobilize. Storm event produced less than 0.10 inch of rain.
- 11/20/99: Storm event was forecasted to be "Unlikely" according to the Deployment Criteria and therefore, teams did not mobilize. Storm event produced less than 0.10 inch of rain.

*Operations and Maintenance*

**Strip:**

9/15/99 through 12/3/99: Watered the Strip in accordance with Margot Griswold's recommended schedule. Strip is currently being watered 1x/3 weeks. Set traps for gophers in fresh burrows.

10/20/99: Conducted monthly inspection. Weeds were pulled and trash was removed.

10/29/99: Weeds were removed from the donor portion of the Strip in preparation for placement of new salt grass.

11/2/99: Removed small piles of debris that had collected in front of Strip and swept the side concrete swale.

11/3/99: Began cutting vegetation to an average height of 6 inches in accordance with the MID.

11/4/99: Finished cutting vegetation to an average height of 6 inches in accordance with the MID.

11/8/99: Visited the nursery with Margot Griswold to select salt grass flats for transplant.

- 11/9/99: Donor portion of strip was prepared for salt grass placement by tilling the soil and leveling it so that the proper slope was maintained.
- 11/10/99: Placed 120 flats of salt grass in the donor portion of the Strip.
- 11/11/99: Placed 103 flats of salt grass in the donor portion of the Strip completing the salt grass placement.
- 11/28/99 (week of): Contract with hydroseeder was signed. Site was scarified with hydroseeding scheduled for the week of 12/6/99.

#### Swale:

9/15/99 through 12/3/99: Watered the Swale in accordance with Margot Griswold's recommended schedule. Swale is currently being watered 1x/4 weeks. Set traps for gophers in fresh burrows.

10/20/99: Conducted monthly site inspection. Weeds were removed, old animal burrows were flattened, and trash was removed.

10/28/99: Began cutting vegetation to an average height of 6 inches in accordance with the MID.

Week of 11/1/99: Vegetation cutting was completed and cuttings were removed from site.

11/28/99 (week of): Contract with hydroseeder was signed. Site was scarified with hydroseeding scheduled for the week of 12/6/99.

#### *Vector Activities*

None noted during routine inspection.

#### *Issues / Solutions*

Modifications to biostrip were performed during the week of 9/27/99. Modifications were made due to traffic safety concerns raised by the CHP. The bioswale energy dissipator and flow spreader were grouted during the week of 9/27/99 to eliminate standing water.

### Cerritos Maintenance Station Bio Swale (Site ID 73223) MW/Law

#### *Monitoring/Sampling Activities*

10/1/99 through 12/3/99: Data was downloaded from the monitoring equipment.

10/20/99: Monitoring equipment was checked for earthquake damage.

11/8/99: Storm event was forecasted to be "Unlikely" according to the Deployment Criteria and therefore, teams did not mobilize. At the end of the storm event, which produced 0.09 inch of rain, the Swale was observed not to have any areas of channelization or ponding. No flow was recorded by the influent sampling location and 2 cubic feet of flow was recorded by the downstream sampling location.

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- 11/15/99: Storm event was forecasted to be "Unlikely" according to the Deployment Criteria and therefore, teams did not mobilize. Storm event produced less than 0.10 inch of rain.
- 11/20/99: Storm event was forecasted to be "Unlikely" according to the Deployment Criteria and therefore, teams did not mobilize. Storm event produced less than 0.10 inch of rain.

#### *Operations and Maintenance*

9/15/99 through 12/3/99: Watered the Swale in accordance with Margot Griswold's recommended schedule. Swale is currently being watered 1x/4 weeks. Set traps for gophers in fresh burrows.

10/20/99: Conducted monthly inspection.

10/28/99: Vegetation was cut to an average height of 6 inches in accordance with the MID.

11/30/99: Removed pine needles and leaves from the energy dissipator and flumes.

11/28/99 (week of): ..... Contract with hydroseeder was signed. Site was scarified with hydroseeding scheduled for the week of 12/6/99.

#### *Vector Activities*

None noted this period.

#### *Issues / Solutions*

The energy dissipator and flow spreader were grouted during the week of 9/27/99 to eliminate standing water.

### **I-5/I-605 Bio Swale (Site ID 73224) MW/Law**

#### *Monitoring/Sampling Activities*

10/1/99 through 12/3/99: Data was downloaded from the monitoring equipment.

10/20/99: Monitoring equipment was checked for earthquake damage.

10/22/99: Batteries at the site were replaced.

11/8/99: Storm event was forecasted to be "Unlikely" according to the Deployment Criteria and therefore, teams did not mobilize. At the end of the storm event, which produced 0.16 inch of rain, the Swale was observed not to have any areas of channelization or ponding. No flow was recorded by the effluent monitoring station and it appeared that runoff only traveled through the first 3rd of the swale and then infiltrated.

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- 11/15/99: Storm event was forecasted to be "Unlikely" according to the Deployment Criteria and therefore, teams did not mobilize. Storm event produced less than 0.10 inch of rain.
- 11/20/99: Storm event was forecasted to be "Unlikely" according to the Deployment Criteria and therefore, teams did not mobilize. Storm event produced less than 0.10 inch of rain.

### *Operations and Maintenance*

9/15/99 through 12/3/99: Watered the Swale in accordance with Margot Griswold's recommended schedule. Swale is currently being watered 1x/2 weeks. Set traps for gophers in fresh burrows.

10/20/99: Conducted monthly inspection. Erosion control vegetation was weed-wacked, and weeds and trash were removed.

11/9/99: While downloading data, it was noted that the previous evening someone had graffitied the equipment enclosures. No damage to the equipment or tubing was found.

11/16/99: Graffiti was removed.

11/18/99: Vegetation was cut to an average height of 6 inches in accordance with the MID.

11/28/99 (week of): Contract with hydroseeder was signed. Site was scarified with hydroseeding scheduled for the week of 12/6/99.

### *Vector Activities*

The monitoring efforts of 9/16/99, 9/21/99 and 9/29/99 showed breeding in the energy dissipator. The energy dissipator was treated with Altosid liquid on 9/17/99, 9/22/99, and 9/30/99.

### *Issues / Solutions*

The energy dissipator and flow spreader were grouted during the week of 9/27/99 to eliminate standing water.

## **I-605/Carson & Del Amo Bio Swale (Site ID 73225) MW/Law**

### *Monitoring/Sampling Activities*

10/20/99: Monitoring equipment was checked for earthquake damage.

11/8/99: Storm event was forecasted to be "Unlikely" according to the Deployment Criteria and therefore, teams did not mobilize. At the end of the storm event, which produced 0.09 inch of rain, the Swale was observed not to have any areas of channelization or ponding. It appeared that runoff only traveled through the first 3rd of the swale and then infiltrated.

11/15/99: Storm event was forecasted to be "Unlikely" according to the Deployment Criteria and therefore, teams did not mobilize. Storm event produced less than 0.10 inch of rain.

11/20/99: Storm event was forecasted to be "Unlikely" according to the Deployment Criteria and therefore, teams did not mobilize. Storm event produced less than 0.10 inch of rain.

### *Operations and Maintenance*

9/15/99 through 12/3/99: Watered the Swale in accordance with Margot Griswold's recommended schedule. Swale is currently being watered 1x/week.

10/20/99: Conducted monthly inspection. Erosion control vegetation was trimmed, and weeds and trash were removed.

10/28/99: Swale vegetation was cut to an average height of 6 inches in accordance with the MID.

11/28/99 (week of): .....Contract with hydroseeder was signed. Site was scarified with hydroseeding scheduled for the week of 12/6/99.

### *Vector Activities*

None noted this period.

### *Issues / Solutions*

The energy dissipator and flow spreader were grouted during the week of 9/27/99 to eliminate standing water.

On 12/1/99, the monitoring equipment was vandalized (teflon tubing and bubbler tubing was cut). On 12/2/99, the equipment was repaired.

## District 11 BMP Pilot Sites

### Monitoring Activities Applicable to All Sites

All sites were ready to monitor on October 1 for the 1999/2000 storm season.

**Table I Final Field Flow Tests 1999 District 11 BMP Pilot Study  
500 Gallon Volumetric Flow Tests**

Site	Inlet Percent Recovery	Outlet Percent Recovery
I-5 / SR-56 EDB	103%	102%
I-15 / SR-78 EDB	91%	98%
Manchester EDB	101%	100%
La Costa Wet Basin	95%	Flow Rated
La Costa P&R Sand Filter <sup>1</sup>	96%	108%
I-5 / SR-78 Sand Filter <sup>1</sup>	100%	Level Calibrated LF Palmer Bowlus <sup>2</sup>
Escondido MS Sand Filter <sup>1</sup>	98%	98%
Melrose Bio-swale	100%	103%
Palomar Airport Bio-swale	97%	98%
Kearny Mesa MS Media Filter <sup>1</sup>	99%	100%
Carlsbad MS Bio-strip	98%	95%

<sup>1</sup>Percent Recovery of Primary Flow Meter shown where back up flow meters present.

<sup>2</sup>Volumetric Flow Calibrations are not possible at the outlet of I-5/SR-78 P&R Sand Filter because it is not possible to place a hose in the conveyance upstream of the monitoring manhole.

### Maintenance Activities Applicable to all sites

Monthly site inspections occurred the second week of October and the first week of November. Minor maintenance and trash pickup is being performed during each monthly inspection. Public signs explaining the Caltrans BMP Retrofit Pilot Study and the site specific BMP designs were installed at each District 11 location during the first week of October. Below is a table which displays Maintenance Indicator Document (MID) activities that occurred at appropriate sites throughout the past three months:

**Table II MID Activities for the District 11 BMP Retrofit Pilot Study**

BMP	Site	Maintenance Activity	Date
EDB	I-5 / SR-56	Emergent wetland vegetation hand pulled from the inlet rip-rap	10/8/99
		Scarified 1-1.5 inches and weeded	11/8/99
		Re-hydroseeded	11/9/99
	Manchester	Hand weeded	10/2/99
		Re-hydroseeded	11/9/99
IB	La Costa (west)	Emergent Wetland Vegetation Hand Pulled	10/16/99
Swale	Melrose	Hand weeded and cut to a nominal height of 6 inches	10/2/99
		Replacement flats planted	10/4/99
		Slopes re-hydroseeded	11/9/99
	Palomar	Hand weeded and cut to a nominal height of 9 inches	10/2/99
Strip	Carlsbad MS	Hand weeded and cut to a nominal height of 6 inches	10/2/99

Vector Activities Applicable to all sites

Inspections of all sites were completed on September 28, October 4, 11, 18, 25, November 2, 8, 15, 22, and 29th.

**I-5/SR-56 Extended Detention Basin (Site ID 111101) KLI**

*Monitoring/Sampling Activities*

No monitoring activities to note during this three month period.

*Operations and Maintenance*

See Table II for MID activities.

*Vector Activities*

Breeding was observed on September 13 and 21. On September 28, standing water in first basin yielded mosquito larvae, a pupa, and two mosquito egg rafts; immatures were identified as *Culex tarsalis* and *Culex pipiens* first and fourth instars. On October 4, water in first basin was supporting *Culex pipiens* breeding in all stages, egg rafts to pupae; aquatic crustaceans and other insect larvae (beetles, etc.) were also noted. On October 11, breeding was observed in first basin. On October 18, the first basin was breeding mosquitos. Small pockets of standing water in the second basin could not be sampled for mosquito larvae; a turkey baster was supplied for sampling these difficult-to-reach sites. On October 25, mosquito breeding was found in the first basin. No treatment was deemed necessary. On November 2, mosquito breeding was

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noted and sampled in the first basin. No treatment deemed necessary. On November 8, breeding observed. The site was dry on November 15. On November 22, breeding was observed; the site was treated with Altosid pellets. On November 29, breeding was observed in the second basin.

*Issues / Solutions*

None this period.

**SR-78/I-15 Extended Detention Basin (Site ID 111102) KLI**

*Monitoring/Sampling Activities*

No monitoring activities to note during this three month period.

*Operations and Maintenance*

No maintenance activities to note.

*Vector Activities*

None this period.

*Issues / Solutions*

None.

**I-5/La Costa Avenue Infiltration Basin (Site ID 111103) KLI**

*Monitoring/Sampling Activities*

None.

*Operations and Maintenance*

See Table II for MID activities during this three month period.

*Vector Activities*

None this period.

*Issues / Solutions*

The groundwater level log is enclosed in Appendix G.

**I-5/La Costa Wet Basin (Site ID 111104) KLI**

*Monitoring/Sampling Activities*

A 48-hour time-weighted composite sample of the 6-inch inlet pipe that maintains the permanent pool of water in the wet basin was sampled on October 25-26 and November 28-29.

*Operations and Maintenance*

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The lower basin was hand weeded on October 5 and the upper section was hand weeded on October 7. Deciduous riparian plants were re-planted on October 9-11. The plant establishment period for the La Costa Wet Basin ended on October 12.

*Vector Activities*

No breeding was noted this period; however, cast chironomid pupal skins have been noted. On November 8, the water level in the main pond seemed constant. Many *Gambusia* were noted. Evidence of a significant emergence of chironomid midges was also noted (i.e. numerous cast pupal skins). Raccoon tracks were observed around the edge of the pond. On November 15, no mosquito breeding was noted and the *Gambusia* were plentiful. Cast chironomid pupal skins were noted on November 22.

*Issues / Solutions*

None this period.

**I-5/Manchester Avenue Extended Detention Basin (Site ID 111105) KLI**

*Monitoring/Sampling Activities*

No monitoring activities to note during this three month period.

*Operations and Maintenance*

See Table II for MID activities.

Four trees that had died for various reasons were re-planted on October 11 under the plant establishment program at the Manchester EDB. The plant establishment program ended October 12.

*Vector Activities*

None this period.

*Issues/Solutions*

None this period.

**Kearney Mesa Maintenance Station StormFilter - Perlite/Zeolite (Site ID 112201)  
KLI**

*Monitoring/Sampling Activities*

No monitoring activities to note during this three month period.

*Operations and Maintenance*

No maintenance activities to note.

*Vector Activities*

On September 28, several adult psychodids (Diptera: Psychodidae) were noted in the basins; no psychodid larvae or mosquito larvae were observed. On October 4, a few psychodid larvae and small crustaceans were noted. On November 8, mosquito breeding was observed in the first and second chambers. On November 15, many adult mosquitoes and a few mosquito pupae were

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found in the first and second basins. No abatement was deemed necessary. On November 22, staff noted chironomid and psychodid larvae in the standing water in the first chamber. No breeding was noted on November 29.

*Issues / Solutions*

None this period.

Escondido Maintenance Station Media Filter - Sand (Site ID 112202) KLI

*Monitoring/Sampling Activities*

No monitoring activities to note during this period.

*Operations and Maintenance*

No maintenance activities to note.

*Vector Activities*

On October 4, small amounts of standing water were supporting minor amounts of *Culex pipiens* breeding (third instars). On October 11, no mosquito breeding was noted, but two adult *Culex pipiens* mosquitoes were collected inside the basins. On October 25, mosquito breeding (larvae & pupae) was noted in the standing water in the primary basin. On November 8, mosquito breeding was found in the standing water in the primary basin. Psychodid larvae and adults were also noted. No treatment was deemed necessary. On November 15, many larval and adult psychodids were noted. However, no mosquito breeding was found. On November 22, standing water was breeding psychodids. On November 29, no mosquito breeding was noted, but psychodid larvae and pupae were noted.

*Issues / Solutions*

None this period.

La Costa Park and Ride Media Filter - Sand (Site ID 112203) KLI

*Monitoring/Sampling Activities*

No monitoring activities to note during this three month period.

*Operations and Maintenance*

No maintenance activities to note.

*Vector Activities*

On September 28, both basins were breeding *Culex pipiens* second and third instars. On October 4, three small depressions in the second basin were holding water; two of the three small depressions were breeding *Culex tarsalis* and *Culex pipiens* second and third instars and pupae. On October 11, minor mosquito breeding was observed in small depression in the spreader trough. The site was dry on November 8, 15, 22 and 29.

*Issues / Solutions*

None this period.

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## SR-78/I-5 Park and Ride Media Filter - Sand (Site ID 112204) KLI

### *Monitoring/Sampling Activities*

No monitoring activities to note during this three month period.

### *Operations and Maintenance*

No maintenance activities to note.

### *Vector Activities*

On September 28, insignificant mosquito breeding was noted in the small center depression in the spreader trough; breeding was identified as *Culex pipiens* second and third instars. No treatment was deemed necessary. On October 18, all stages of mosquito breeding was found in the first basin and the spreader trough in the second basin. On October 25, two small depressions in the second basin were breeding mosquitoes. No treatment was deemed necessary. The site was dry on November 8, 15 and 22

### *Issues / Solutions*

None this period.

## Melrose Ave/SR-78 Bio Swale (Site ID 112205) KLI

### *Monitoring/Sampling Activities*

KLI installed and calibrated a low-profile Area-Velocity Bubbler at the Melrose inlet during the week of September 20. Flow test results can be seen in Table I. KLI also retrofitted the outlet with a 1.5-ft H-flume. These flow test results can be seen in Table I as well.

### *Operations and Maintenance*

See Table II for MID activities during this three month period.

KLI maintained a strict watering schedule for the salt grass throughout October and the first week of November. The site was watered twice a week within an eight hour period for 45-minutes each time. Watering was stopped after the site was re-hydroseeded on November 9 because the salt grass was going into dormancy.

### *Vector Activities*

Gopher activity was noted by vector control staff on November 22. More gopher activity was noted on November 29.

### *Issues / Solutions*

None this period.

## I-5 Palomar Airport Biofiltration Swale (Site ID 112206) KLI

### *Monitoring/Sampling Activities*

KLI installed and calibrated a low-profile Area-Velocity Bubbler at the Palomar inlet during the week of September 20. Flow test results can be seen in Table I. KLI also retrofitted the outlet with a 1.0-ft H-flume. These flow test results can be seen in Table I as well.

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*Operation and Maintenance*

See Table II for MID activities during this three month period.

The watering schedule for the salt grass has been reduce to what Marina Landscape deems necessary for their surrounding plantings.

*Vector Activities*

None this period. Vector control staff noted gopher activity on November 29.

*Issues / Solutions*

None this period.

Carlsbad Maintenance Station Bio Strip Infiltration Trench (Site ID 112207) KLI

*Monitoring/Sampling Activities*

Strip:

KLI retrofitted the inlet to the Strip at Carlsbad MS with a 1.0-ft H-flume. Flow test results can be seen in Table I. KLI also installed and calibrated a low-profile Area-Velocity Bubbler at the outlet during the week of September 20. These flow test results can be seen in Table I as well.

Trench:

Well depth measurements were taken on September 30, October 26 and November 29.

Baseline water quality well samples were taken on October 26.

*Operations and Maintenance*

Strip:

See Table II for MID activities during this three month period.

KLI has maintained the current watering schedule in October and November. The site was watered twice a week within an eight hour period for 30-minutes each time. Watering stopped after November 24 because the grass is dormant.

Trench:

No maintenance activities to note.

*Vector Activities*

None this period.

*Issues / Solutions*

None this period.

**BMP OPERATIONS STATUS OF REMAINING SITES TO BE CONSTRUCTED**

Location	BMP Type	Monitor Consultant	Site "On-line" <sup>2</sup>	Begin Instrument Install <sup>1</sup>	Complete Instrument Install	Operational <sup>3</sup> (start empirical and maintain)	Ready for Water Quality Monitoring <sup>4</sup>
<b>DISTRICT 7</b>							
I-210 East of Orcas	CDS	MW/Law	2/22/00	2/22/00	3/7/00	3/7/00	3/7/00
I-210 East of Filmore	CDS	MW/Law	2/22/00	2/22/00	3/7/00	3/7/00	3/7/00
Paxton Park & Ride	MF	BC	6/30/00	6/30/00	7/14/00	7/14/00	7/14/00
Metro MS	MCTT	BC	6/23/00	6/23/00	7/7/00	7/7/00	7/7/00

<sup>1</sup> Equipment installation schedule is dependent upon construction schedule.

<sup>2</sup> Site on-line means BMP will receive stormwater runoff, not necessarily ready for monitoring or operations.

<sup>3</sup> Site operational means BMP meets completion criteria and BMP is turned over to monitoring/maintenance teams to begin empirical observations and maintenance.

<sup>4</sup> Ready for water quality monitoring means BMP has a full equipment installation and the equipment is ready to draw samples.



## SUMMARY OF REQUIRED AND SUCCESSFULLY SAMPLED STORMS PER SITE

Location	BMP Type	Monitoring Consultant	Operational?	Operational Date	Total Storms Required	1998-1999 Successfully Sampled Storms <sup>1</sup>	1999-2000 Successfully Sampled Storms
<b>District 7</b>							
I-605/SR-91	IB	MW/Law	Yes	4/9/99	4		
I-210 East of Orcas	CDS	MW/Law		3/7/00 <sup>3</sup>	8		
I-210 East of Filmore	CDS	MW/Law		3/7/00 <sup>3</sup>	8		
I-5/I-605	EDB	BC	Yes	2/26/99	10	2	
I-605/SR-91	EDB	BC	Yes	2/22/99	10	3	
Paxton Park & Ride	MF	BC		7/14/00 <sup>3</sup>	8		
Metro MS	MCTT	BC		7/7/00 <sup>3</sup>	8		
Alameda MS	OWS	BC	Yes	5/17/99	8		
Eastern MS	MF	BC	Yes	2/15/99	8	1	
Foothill MS	MF	BC	Yes	3/8/99	8	2	
Termination Park & Ride	MF	BC	Yes	5/17/99	8		
Via Verde Park & Ride	MCTT	BC	Yes	5/17/99	8		
Lakewood Park & Ride	MCTT	BC	Yes	5/17/99	8		
Altadena	Bio Strip	MW/Law	Yes	10/1/99	8		
	Infiltration Trench	MW/Law	Yes	10/1/99	8		
Foothill MS	DII north- StreamGuard Insert	MW/Law	Yes	1/22/99	8	3	
	DII south- Fossil Filter Insert	MW/Law	Yes	1/22/99	8	3	
LasFlores MS	DII north-StreamGuard Insert	MW/Law	Yes	1/22/99	8	5 <sup>2</sup>	
	DII south-Fossil Filter Insert	MW/Law	Yes	1/22/99	8	2	
Rosemead MS	DII north-Fossil Filter Insert	MW/Law	Yes	1/22/99	8	3 <sup>2</sup>	
	DII south-StreamGuard Insert	MW/Law	Yes	1/22/99	8	3	
I-605/SR-91	Bio Strip	MW/Law	Yes	1/22/99	8		
	Bio Swale	MW/Law	Yes	10/1/99	8		
Cerritos MS	BioSwale	MW/Law	Yes	10/1/99	8		
I-5/I-605	BioSwale	MW/Law	Yes	10/1/99	8		
I-605/ Del Amo	BioSwale	MW/Law	Yes	10/1/99	8		
<b>District 11</b>							
I-5/SR-56	EDB	KLI	Yes	1/24/99	4	5	
I-15/SR-78	EDB	KLI	Yes	1/24/99	10	4	
I-5/La Costa (West)	IB	KLI	Yes	1/24/99	4		
I-5/La Costa (East)	WB	KLI	Yes	10/1/99	4		
I-5/Manchester (East)	EDB	KLI	Yes	10/1/99	4		
Kearney Mesa MS	StormFilter (Perlite/Zeolite)	KLI	Yes	10/1/99	8	3	
Escondido MS	MF	KLI	Yes	2/16/99	8	3	
La Costa Park & Ride	MF	KLI	Yes	2/16/99	4	3	
SR-78/I-5 Park & Ride	MF	KLI	Yes	2/26/99	8	2	
Melrose Ave/SR-78	Bio Swale	KLI	Yes	3/1/99	8		
I-5 Palomar Airport Road	Bio Swale	KLI	Yes	10/1/99	8		
Carlsbad MS	Bio Strip	KLI	Yes	10/1/99	4		
	Infiltration Trench	KLI	Yes	10/1/99	4		

(1) All DII data in question. A criteria for acceptance will be established

(2) Pending result of inlet analysis

(3) Subject to Schedule Update

## OMM PLAN ACTIVITIES

### Volume I

During the quarter, revisions and updates were made to the Vol I document. The document was finalized and forwarded to the Plaintiffs on November 19.

### Volume II

During the quarter, revisions and updates were made to the Vol II documents. The documents were finalized and forwarded to the Plaintiffs on November 19.

As requested by the Plaintiffs, KLI had solicited comments/changes from Stormwater Management on the OMM for the Kearney Mesa Maintenance Station StormFilter™. Comments/changes from Stormwater Management are enclosed as Appendix B of this document.

### Maintenance Indicator Document

During the quarter, changes were made to the MID. The updated MID has been included as Appendix V to Vol II of the OMM document finalized on November 19.

### Database

Continuous monthly updates to the OMM Database have been made. Updated reports are posted on the website every 15<sup>th</sup> of the month. The first of an annual submittal of the database (software and data) was provided to the Plaintiffs on October 28, 1999.

A site-by-site sorting capability is currently being added to the database reporting feature. The current database provides a reporting feature which allows a sort by districts and/or by BMP device type. In addition, efforts are being made to include the database on vector activities prepared by DHS.

### OMM Cost

The OMM cost associated with all OMM activities including operation, maintenance, vector monitoring, and equipment costs are tracked and updated on a monthly basis. A Maintenance Operation Cost Accounting Summary is included in Appendix C for the year ending September 1999. A separate tracking OMM Cost Summary worksheet beginning October 1999 is also included.

## VECTOR ACTIVITIES

Summary of vector issues from 9/15/99 to 12/3/99. Site-specific details on vector activities are provided in the OMM section

### DISTRICT 7

#### San Gabriel Valley Mosquito & Vector Control District

##### Monitoring

The monitoring efforts of 9/28/99 and 10/29/99 found breeding occurring in the Media Filter at the MCTT at the Via Verde P&R (Site #74206).

The monitoring effort of 11/18/99 found breeding occurring in the flume housing of the Drain Inlet Insert at the Rosemead MS (Site #73218).

##### Abatement

9/29/99 - The MCTT at Via Verde P&R (Site #74206) was treated with Altosid pellets.

11/1/99 - The MCTT at Via Verde P&R (Site #74206) was treated with Altosid pellets.

11/19/99 – The DII at Rosemead MS (Site #73218) was treated with Altosid pellets.

#### Greater Los Angeles County Vector Control District

##### Monitoring

The monitoring effort of 9/16/99 found breeding occurring in the MCTT at Lakewood P&R (Site #74208), the energy dissipator of the Bioswale at I-5/I-605 (Site #73224) and the outlet structure of the EDB at I-5/I-605 (Site #74101).

The monitoring effort of 9/21/99 found breeding occurring in the energy dissipator of the Bioswale at I-5/I-605 (Site #73224).

The monitoring effort of 9/29/99 found breeding occurring in the energy dissipator of the Bioswale at the I-5/I-605 Interchange (Site #73224).

The monitoring effort of 10/6/99 found breeding occurring in the Media Filter at the Termination P&R (Site #74204).

The monitoring effort of 11/23/99 found breeding occurring in the Media Filter at Termination P&R (Site #74204) and the MCTT at Lakewood P&R (Site #74208).

The monitoring effort of 11/30/99 found breeding occurring in the spreader ditch of the Biofiltration Strip at the Altadena MS (Site #73211a).

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## Abatement

9/17/99 – The MCTT at Lakewood P&R (Site #74208) was treated with Altosid pellets. The energy dissipator of the Bioswale at I-5/I-605 (Site #73224) and the outlet structure of the EDB at I-5/I-605 (Site #74101) was treated with Altosid liquid.

9/22/99 - The energy dissipator of the Bioswale at I-5/I-605 (Site #73224) was treated with Altosid liquid.

9/30/99 - The energy dissipator of the Bioswale at I-5/I-605 (Site #73224) was treated with Altosid liquid.

10/7/99 – The Media Filter at Termination P&R (Site #74204) was treated with Altosid liquid.

11/24/99 - The Media Filter at Termination P&R (Site #74204) and the MCTT at Lakewood P&R (Site #74208) was treated with Altosid liquid.

12/1/99 – The spreader ditch of the Biofiltration Strip at the Altadena MS (Site #73211a) was treated with Altosid liquid.

## Los Angeles County West Vector Control District

LACWVCD personnel were given a tour of the BMP site on 12/1/99. Monitoring will commence the week of 12/6/99.

## DISTRICT 11

### County of San Diego Vector Surveillance and Control

#### Monitoring

The monitoring effort of 9/13/99 showed breeding in the EDB at I-5/SR-56 (Site #111101).

The monitoring effort of 9/21/99 showed breeding in the EDB at I-5/SR-56 (Site #111101).

The monitoring effort of 9/28/99 showed breeding in the EDB at I-5/SR-56 (Site #111101), the Media Filter at the La Costa P&R (Site #112203) and the Media Filter at I-5/SR-78 P&R (Site #112204).

The monitoring effort of 10/04/99 showed breeding in the EDB at I-5/SR-56 (Site #111101), the Media Filter at the La Costa P&R (Site #112203) and the Media Filter at the Escondido MS (Site #112202).

The monitoring effort of 10/11/99 showed breeding in the EDB at I-5/SR-56 (Site #111101), the Media Filter at the La Costa P&R (Site #112203) and the Media Filter at the Escondido MS (Site #112202).

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The monitoring effort of 10/18/99 showed breeding in the EDB at I-5/SR-56 (Site #111101) and the Media Filter at I-5/SR-78 (Site #112204).

The monitoring effort of 10/25/99 showed breeding at the EDB at I-5/SR-56 (Site #111101), the Media Filter at I-5/SR-78 (Site #112204) and the Media Filter at the Escondido MS (Site #112202).

The monitoring effort of 11/2/99 showed breeding at the EDB at I-5/SR-56 (Site #111101).

The monitoring effort of 11/8/99 showed breeding occurring in the Media Filter at Kearny Mesa MS (Site #112201), the EDB at I-5/SR-56 (Site #111101), and the Media Filter at the Escondido MS (Site #112202).

The monitoring effort of 11/15/99 showed breeding occurring in the Media Filter at Kearny Mesa MS (Site #112201).

The monitoring effort of 11/22/99 showed breeding occurring in the EDB at I-5/SR-56 (Site #111101).

The monitoring effort of 11/29/99 showed breeding occurring in the EDB at I-5/SR-56 (Site #111101).

### Abatement

11/22/99 – The EDB at I-5/SR-56 (Site #111101) was treated with Altosid pellets.

## DEPARTMENT OF HEALTH SERVICES

The Department of Health Services continues to solicit vector production information from other municipalities that operate similar BMPs within their jurisdiction. Also, DHS is currently formulating a questionnaire to be mailed to vector control agencies in other states. DHS anticipates that site visits may be made to some locations in the spring of 2000. An interim report on the DHS survey is scheduled for completion on Jan. 15, 2000.

DHS has completed the research plan for the BMP mosquito production study and have commenced data collection from sites in both Districts 7 and 11. DHS has made one substantial change to the study plan as submitted. The original sampling scheme envisioned dividing the BMPs into two sets of sites; primary and secondary. The primary sites would be intensively sampled (including measurement of physical parameters, sampling for fish and other invertebrates, etc.) by DHS with the secondary sites being monitored solely for mosquito larvae by the VCDs. The data from the secondary sites being viewed as merely supplemental to that of the production data from the primary sites. However, DHS has concluded that all the BMPs should be monitored and sampled as primary sites in order to gain the maximum amount of information possible with regards to mosquito production. DHS has prepared a memorandum on changes to the sampling plan (See memo in Appendix E). A copy of the DHS Study Plan is enclosed in Appendix E.

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To date, the following efforts have been made in undertaking the mosquito production study:

- Commencing in October, DHS conducted weekly data collection and sampling of BMPs in San Diego (District 11) and Los Angeles (District 7) throughout the period.
- Continued standardization of sampling techniques and monitoring frequency with the Vector Control Districts in District 7 and District 11.
- Reviewed literature on mosquito predator studies.

DHS also continues to oversee all aspects of vector monitoring and data collection by the local VCDs.

DHS continues to fine-tune their vector database. Efforts are being made to link the DHS database to the BMP Pilot Program database operated by RBF. However, there do appear to be some technical and institutional hurdles to overcome. DHS is currently producing a memorandum outlining this situation.

DHS and representatives from the Greater Los Angeles County Vector Control District, The San Gabriel Valley Mosquito & Vector Control District met with Brown and Caldwell and Caltrans to discuss problems associated with monitoring and abating the Multi-Chambered Treatment Train BMPs. DHS is currently formulating specific design recommendations with regard to vector problems associated with these BMPs. These recommendations will be presented to the BMP design team as soon as possible.

## ADULT MONITORING

UC Riverside has supplied a Quarterly Status Report on the adult mosquito and midge monitoring program for this quarter (attached). All adult monitoring data will be statistically analyzed by UC Riverside beginning the week of Jan. 3, 2000, with special emphasis on the relationship between control sites and BMP sites. UC Riverside will then meet with Caltrans, consultants, DHS and VCD representatives to determine whether the adult monitoring program should be continued. The date and location of this meeting has not yet been set.

The sites monitored by each VCD is summarized in the following table:

## Sites Monitored by Vector Control District

Location	BMP Type	Monitor Consultant	Vector Control District	Activities
<b>DISTRICT 7</b>				
I-605/SR-91	IB	MW/Law	GLACVCD	None noted during routine inspection.
I-210 East of Orcas	CDS	MW/Law	GLACVCD	N/A
I-210 East of Filmore	CDS	MW/Law	GLACVCD	N/A
I-5/I-605	EDB	BC	GLACVCD	September 16: Breeding occurring at the outlet structure. September 17: Outlet structure treated with Altosid liquid.
I-605/SR-91	EDB	BC	GLACVCD	None noted during routine inspection.
Paxton Park & Ride	MF	BC	GLACVCD	N/A
Metro MS	MCTT	BC	GLACVCD	N/A
Alameda MS	OWS	BC	GLACVCD	None noted during routine inspection.
Eastern MS	MF	BC	GLACVCD	None noted during routine inspection.
Foothill MS	MF	BC	SGVVCD	None noted during routine inspection.
Termination Park & Ride	MF	BC	GLACVCD	October 6: Breeding observed. October 7: Site treated with Altosid liquid. November 23: Breeding observed. November 24: Site treated with Altosid liquid.
Via Verde Park & Ride	MCTT	BC	SGVVCD	September 28: Breeding observed in the media filter at the MCTT. September 29: Site treated with Altosid pellets. October 29: Breeding occurring in the media filter at the MCTT. November 1: Site abated with Altosid pellets.
Lakewood Park & Ride	MCTT	BC	GLACVCD	September 16: Breeding observed. September 17: Site treated with Altosid pellets. November 23: Breeding observed. November 24: Site treated with Altosid liquid.
Altadena	Bio Strip/TT	MW/Law	GLACVCD	December 2: Site treated with Altosid liquid.
Foothill	DII	MW/Law	SGVVCD	None noted during routine inspection.
LasFlores	DII	MW/Law	LA Co West	The service agreement with the Los Angeles County West Vector Control District has been accepted by the both the District's Board of Directors and Montgomery Watson. December 1: LACWVCD personnel were given a tour of the site. December 6 (week of): Monitoring expected to commence.
Rosemead	DII	MW/Law	SGVVCD	November 18: Breeding occurring in the flume housing. November 19: Site treated with Altosid pellets.
I-605/SR-91	Bio Strip/Swale	MW/Law	GLACVCD	None noted during routine inspection.
Cerritos MS	BioSwale	MW/Law	GLACVCD	None noted during routine inspection.

Location	BMP Type	Monitor Consultant	Vector Control District	Activities
I-5/I-605	BioSwale	MW/Law	GLACVCD	September 16: Breeding occurring in the energy dissipator. September 17: Energy dissipator treated with Altosid liquid. September 21: Breeding occurring in the energy dissipator. September 22: Energy dissipator treated with Altosid liquid. September 29: Breeding observed in energy dissipator. September 30: Site treated with Altosid liquid.
I-605/ Del Amo	BioSwale	MW/Law	GLACVCD	None noted during routine inspection.
<b>DISTRICT 11</b>				
I-5/SR-56	EDB	KLI	SD Co VC	September 13: Breeding observed. September 21: Breeding observed. September 28: Standing water in first basin yielded mosquito larvae, a pupa, and two mosquito egg rafts; immatures identified as <i>Culex tarsalis</i> and <i>Culex pipiens</i> first and fourth instars. October 4: Water in first basin supporting <i>Culex pipiens</i> breeding in all stages, egg rafts to pupae; aquatic crustaceans and other insect larvae (beetles, etc.) also noted. October 11: Breeding observed in first basin. October 18: First basin breeding mosquitos. Small pockets of standing water in the second basin could not be sampled for mosquito larvae; a turkey baster will be supplied for sampling these difficult-to-reach sites. October 25: Mosquito breeding found in first basin. No treatment deemed necessary. November 2: Mosquito breeding noted and sampled in the first basin. No treatment deemed necessary. November 8: Breeding observed. November 22: Breeding observed; site treated with Altosid pellets. November 29: Breeding observed in second basin.
I-15/SR-78	EDB	KLI	SD Co VC	None noted during routine inspection.
I-5/La Costa (West)	IB	KLI	SD Co VC	None noted during routine inspection.
I-5/La Costa (East)	WB	KLI	SD Co VC	October 4 and November 22: Cast chironomid pupal skins noted.
I-5/Manchester (East)	EDB	KLI	SD Co VC	None noted during routine inspection.
Kearney Mesa MS	StormFilter (Perlite/Zeolite)	KLI	SD Co VC	September 28: Several adult psychodids (Diptera: Psychodidae) noted in the basins; no psychodid larvae or mosquito larvae observed. October 4: A few psychodid larvae and small crustaceans noted. November 8: Breeding observed. November 15: Breeding observed.
Escondido MS	MF	KLI	SD Co VC	October 4: Small amounts of standing water were supporting minor amounts of <i>Culex pipiens</i> breeding (third instars). October 11: No mosquito breeding noted, but two adult <i>Culex pipiens</i> mosquitoes were collected inside the basins. October 25: Mosquito breeding (larvae & pupae) noted in the standing water in the primary basin. November 8: Breeding observed.
La Costa Park & Ride	MF	KLI	SD Co VC	September 28: Both basins breeding <i>Culex pipiens</i> second and third instars. October 4: Three small depressions in the second basin holding water; two of the three small depressions breeding <i>Culex tarsalis</i> and <i>Culex pipiens</i> second and third instars and pupae. October 11: Minor mosquito breeding observed in small depression in the spreader trough.
SR-78/I-5 Park & Ride	MF	KLI	SD Co VC	September 28: Insignificant mosquito breeding noted in the small center depression in the spreader trough; breeding was identified as <i>Culex pipiens</i> second and third instars. No

Location	BMP Type	Monitor Consultant	Vector Control District	Activities
				treatment deemed necessary. October 18: All stages of mosquito breeding found in the first basin and the spreader trough in the second basin. October 25: Two small depressions in the second basin breeding mosquitoes. No treatment deemed necessary.
Melrose Ave/SR-78	Bio Swale	KLI	SD Co VC	None noted during routine inspection.
I-5 Palomar Airport Road	Bio Swale	KLI	SD Co VC	None noted during routine inspection.
Carlsbad MS	Bio Strip/TT	KLI	SD Co VC	None noted during routine inspection.

## ENVIRONMENTAL ISSUES

Dudek and Associates continue to perform the monthly biological survey of the BMP sites in both districts. There were no significant findings during this quarter. Biological Monitoring Survey reports for the months of September and October 1999 are enclosed in Appendix F.

## WEATHER

Precipitation data for Los Angeles and San Diego were obtained from NOAA (see Tables listing data for the quarter, below). Precipitation data since the beginning of the pilot study is summarized in a graph following the tables.

The data presented here is as a reference only. The actual rainfall at individual BMP sites will vary from the values given in the table. The data presented above for Los Angeles is as of 4:00 p.m. for the preceding 24 hours on the date indicated. For San Diego, is as of 5:00 p.m. for the preceding 24 hours.

### September 1999

Los Angeles – Downtown/USC				San Diego			
Day	Precip. (Inches)	Day	Precip. (Inches)	Day	Precip. (Inches)	Day	Precip. (Inches)
1	0.0	16	0.0	1	0.0	16	0.0
2	0.0	17	0.0	2	0.0	17	0.0
3	0.0	18	0.0	3	0.0	18	0.0
4	0.0	19	0.0	4	0.0	19	0.0
5	0.0	20	0.0	5	0.0	20	0.0
6	0.0	21	0.0	6	0.0	21	Trace
7	0.0	22	Trace	7	0.0	22	0.02
8	0.0	23	0.0	8	0.0	23	0.0
9	0.0	24	0.0	9	Trace	24	0.0
10	0.0	25	0.0	10	0.0	25	0.0
11	0.0	26	0.0	11	0.0	26	0.0
12	0.0	27	0.0	12	0.0	27	0.0
13	0.0	28	0.0	13	0.0	28	0.0
14	0.0	29	0.0	14	0.0	29	0.0
15	0.0	30	0.0	15	0.0	30	0.0

## October 1999

Los Angeles – Downtown/USC				San Diego			
Day	Precip. (Inches)	Day	Precip. (Inches)	Day	Precip. (Inches)	Day	Precip. (Inches)
1	0.0	16	0.0	1	0.0	16	0.0
2	0.0	17	0.0	2	0.0	17	0.0
3	0.0	18	0.0	3	0.0	18	0.0
4	0.0	19	0.0	4	0.0	19	0.0
5	0.0	20	0.0	5	0.0	20	0.0
6	0.0	21	0.0	6	0.0	21	0.0
7	0.0	22	0.0	7	0.0	22	0.0
8	0.0	23	0.0	8	0.0	23	0.0
9	0.0	24	0.0	9	0.0	24	0.0
10	0.0	25	0.0	10	0.0	25	0.0
11	0.0	26	0.0	11	0.0	26	0.0
12	0.0	27	0.0	12	0.0	27	0.0
13	0.0	28	0.0	13	0.0	28	0.0
14	0.0	29	0.0	14	0.0	29	0.0
15	0.0	30	0.0	15	0.0	30	0.0
		31	0.0			31	0.0

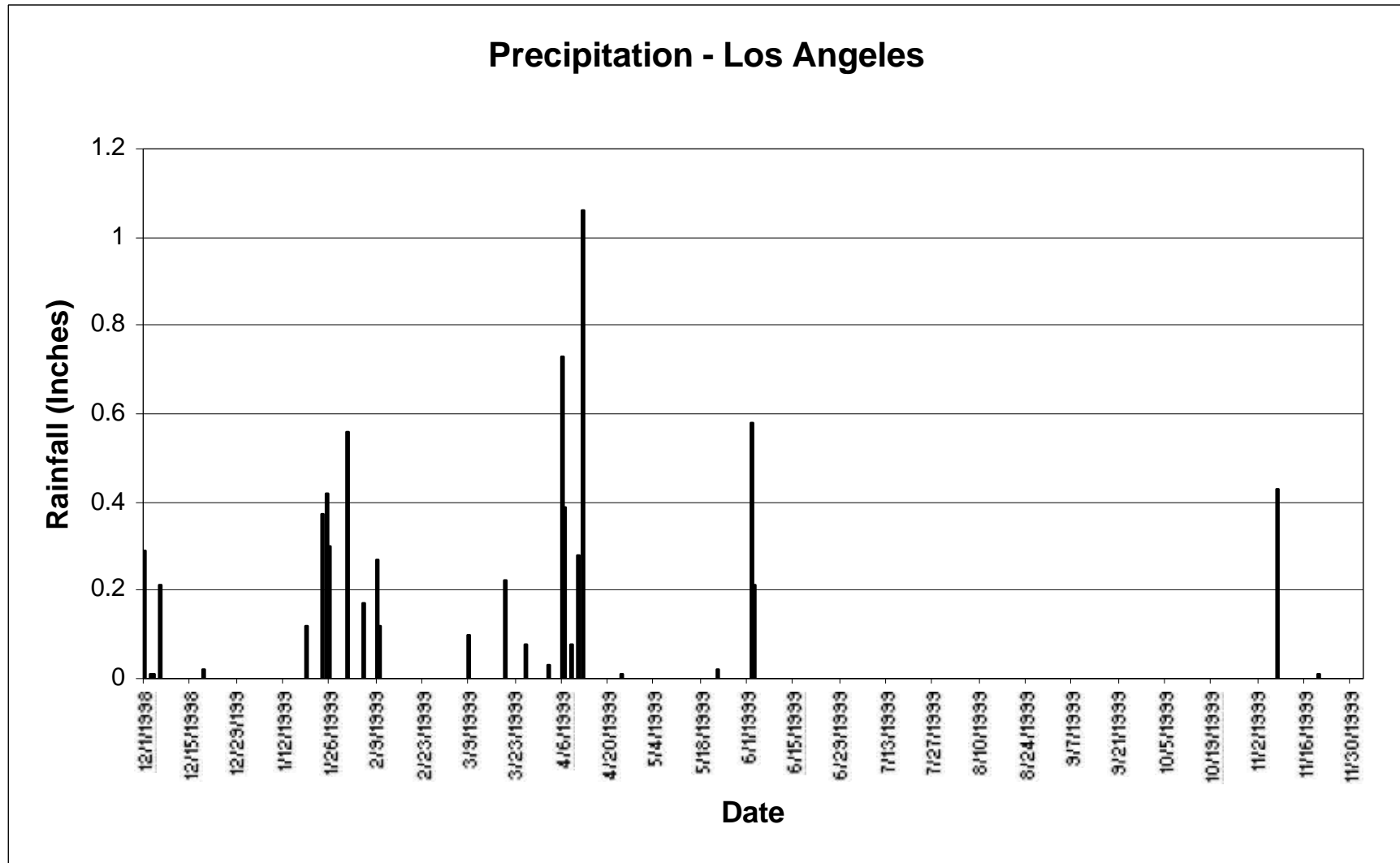
## November 1999

Los Angeles – Downtown/USC				San Diego			
Day	Precip. (Inches)	Day	Precip. (Inches)	Day	Precip. (Inches)	Day	Precip. (Inches)
1	0.0	16	0.0	1	0.0	16	0.0
2	0.0	17	0.0	2	0.0	17	0.04
3	0.0	18	0.0	3	0.0	18	0.0
4	0.0	19	0.0	4	0.0	19	0.0
5	0.0	20	0.01	5	0.0	20	0.0
6	0.0	21	0.0	6	0.0	21	0.0
7	0.0	22	0.0	7	0.0	22	0.0
8	0.43	23	0.0	8	Trace	23	0.0
9	0.0	24	0.0	9	0.0	24	0.0
10	0.0	25	0.0	10	0.0	25	0.0
11	0.0	26	0.0	11	0.0	26	0.0
12	0.0	27	0.0	12	0.0	27	0.0
13	0.0	28	0.0	13	0.0	28	0.0
14	0.0	29	0.0	14	0.0	29	0.0
15	0.0	30	0.0	15	0.0	30	0.0

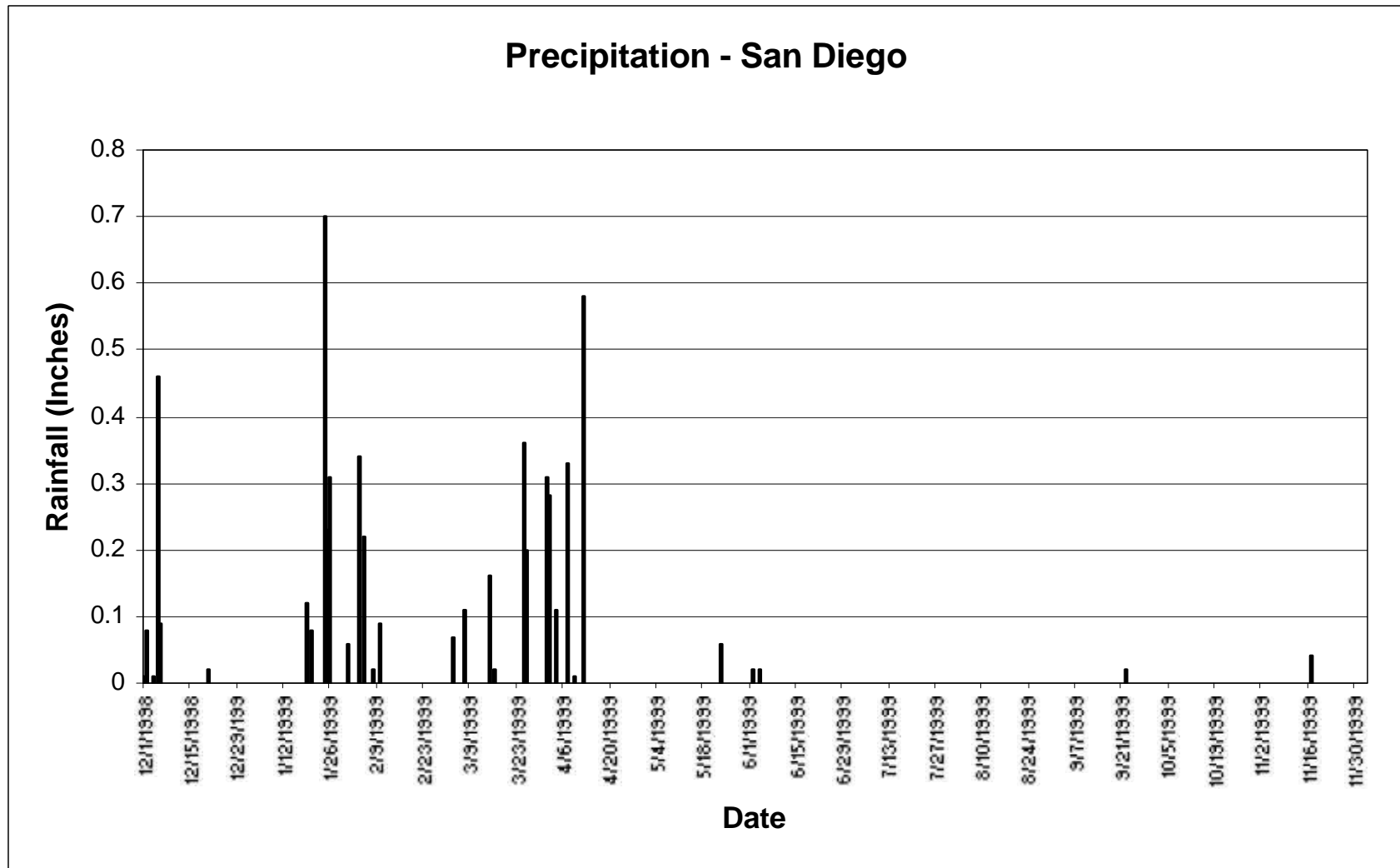
## December 1999

Los Angeles – Downtown/USC				San Diego			
Day	Precip. (Inches)	Day	Precip. (Inches)	Day	Precip. (Inches)	Day	Precip. (Inches)
1	0.0	16		1	0.0	16	
2	0.0	17		2	0.0	17	
3	0.0	18		3	0.0	18	
4		19		4		19	
5		20		5		20	
6		21		6		21	
7		22		7		22	
8		23		8		23	
9		24		9		24	
10		25		10		25	
11		26		11		26	
12		27		12		27	
13		28		13		28	
14		29		14		29	
15		30		15		30	
		31				31	

# Precipitation Data from December 1998 to Present



## Precipitation Data from December 1998 to Present



## **APPENDIX A: QUARTERLY STATUS 6 MEETING MINUTES**



**Robert Bein, William Frost & Associates**  
PROFESSIONAL ENGINEERS, PLANNERS & SURVEYORS

JN: 34123,34218

**STORMWATER PLANNING SERVICES**  
**CONTRACT NO. 43A0004A**  
**Meeting Minutes**

ISSUE VERSION: Final

MEETING NO.: 6

DATE: 9/30/99

TIME: 9:30 am

LOCATION:

District 7, Rm

416

SUBJECT: Quarterly Status Meeting No. 6

Prepared by: S. Taylor

Approved by:

  
(Signature)

Date Prepared: 10/7/99

Attendee Names / Company

Rich Horner/NRDC  
Chris May/NRDC  
Rick Graff/SD BayKeeper  
John Barth/SD BayKeeper  
Steve Fleischli/SM BayKeeper  
Bruce Reznik/SD BayKeeper  
Jeremy Johnstone/USEPA (Phone, partial)  
Everett DeLano/NRDC (Phone, partial)  
Steve Borroum/Caltrans  
Brian Currier/UCD  
Doug Failing/Caltrans  
Peter Van Riper/Caltrans  
Richard Gordon/Caltrans  
Cid Tesoro/Caltrans  
Sayra Ramos/Caltrans  
Bob Wu/Caltrans  
Emilo Veramontes/Caltrans  
Bill Evans/Caltrans

Attendee Names / Company

Dean Messer/LWA  
Anna Lantin/RBF  
Scott Taylor/RBF  
Trevor Smith/RBF  
Ed Othmer/Law  
Bill Whittenberg/RBF  
Ann Walker/RBF  
Brock Ortega/Dudek  
Matt Zapala/KLI  
Pat Kinney/KLI  
Gary Freidman/MW  
Steve Briniger/MW  
Bob Finn/BC  
Doug Robison/BC  
Alan Batdorf/BC  
Mike Barrett/RBF/UT  
Mark Moser/MW

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The following items presented summarize the substantive items discussed or issues resolved at the above meeting to the best of the writer's memory.

# MEETING MINUTES

Meeting Date: September 30, 1999

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ITEM	DESCRIPTION	STATUS	OPENED	DUE	ACTION FOR:
01	The Plaintiffs noted that there was some disagreement over the meeting minutes for the last quarterly status meeting. BayKeeper asked if the primary issues could be summarized at the end of the meeting to make sure there was agreement. RBF agreed to provide a summary.	FYI			
02	BayKeeper asked that the La Costa Infiltration basin be added as an agenda item (11a). NRDC asked that the cost estimate issue also be added as an agenda item (11b), and SM BayKeeper asked that the North Hollywood site be added to the agenda (11c). Agenda Item 11 was taken first at the Plaintiffs request.	FYI			
03	Agenda Item 11(non-stormwater issues): EPA asked that the table indicating the non-stormwater inspection results be updated. The EPA also wanted an update from the Districts as to their investigation into the source of the non-stormwater discharges at each site. Caltrans responded that the reports can be produced in the timeframe needed by the Plaintiffs (monthly). It was agreed that the format for the reports would be consistent between the Districts, and the District 7 format would be shared with District 11. The reports will be available to coincide with the bi-weekly status calls.				RBF/District 11/District 7
04	Agenda Item 11 (con't): NRDC noted that the OMM manual needs to be updated to include the non-stormwater inspections. Caltrans agreed. SD BayKeeper requested that all of the maintenance stations in District 11 be inspected for non-stormwater discharges similar to that agreed to in District 7. District 11 will respond to BayKeeper on this issue.				RBF/Caltrans/Plaintiffs
05	Agenda Item 11 (con't): NRDC described a practice followed at the Rosemead Maintenance Station that was inimical to a good test of the drain inlet insert pilot BMP last winter and is contrary to District 7's Storm Water Management Plan. District 7 office, Baykeeper, and NRDC personnel learned of this practice during a tour on 9/29/99. When it was observed that some pollutant concentrations measured last winter were much higher than would be expected under circumstances of good source control, a station staff member unhesitatingly answered that the reason was likely the practice of the former superintendent of washing out road sweepers behind the office building and in a direct runoff path to one of the insert-equipped inlets, instead of at the clarifier.				
06	Agenda Item 11 (con't): Caltrans noted that Headquarters will be undertaking compliance (SWMP) reviews in District 7 this winter at the request of the District. The Plaintiffs requested copies of the compliance review reports. S. Borroum stated that he would check but "... would like to correct things before embarrassing people." He further indicated that, if shared, the reports will be seasonally summarized and will not focus on individuals. Caltrans and the Plaintiffs to discuss further the timing of the delivery of the reports to the Plaintiffs.				
07	Agenda Item 11a (La Costa Infiltration Basin): Caltrans noted that it is in the process of developing a formal response to EPA's letter and NRDC's letter on this subject. SD BayKeeper asked if the site would be monitored this winter. Caltrans indicated this would be addressed in the letter. Further investigation of the basin will be needed and may require withholding water to perform the investigation. SD				Caltrans D 11

# MEETING MINUTES

Meeting Date: September 30, 1999

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ITEM	DESCRIPTION	STATUS	OPENED	DUE	ACTION FOR:
	BayKeeper also asked about the notes from the technical conference call held on 8/25/99. Caltrans indicated that they had discussed the comments from R. Horner and R. Graff and would finalize the notes. NRDC and EPA requested written response to their letters on this issue.				
08	Agenda Item 11b (Construction Cost Estimates): Caltrans indicated that the Consultants are working on finalizing the construction costs (raw construction costs for those sites that are complete) and are expected to be finished within, at most, 4 weeks of this meeting. A conference call to discuss the costs, the format of the information, and the schedule for the cost workgroup has been set for October 15, at 9am.				All/Caltrans
09	Agenda Item 11c (North Hollywood site): SM Baykeeper requested to discuss this issue. Horner (NRDC) states that this issue is controversial and that he does not want this site demolished, instead "table it." Caltrans suggested that since this is a District 7 issue and outside of the pilot program, it should be discussed separately, Plaintiffs agreed. District 7 to discuss issue with the Plaintiffs. In the meantime, the District will ensure that the facility stays in place.				SM BayKeeper/ Caltrans District 7
010	Agenda Item 3 (Design Schedule): Caltrans reviewed design/construction schedule for CDS units and Paxton and Metro filters. The District noted that the schedule was predicated on not having challenges to the bid or significant rain delays. The Plaintiffs expressed concern about the schedule, noting that there is very little latitude to ensure the new pilots are ready to monitor by the Fall 2000. The Paxton 9/16/99 date has slipped to 10/12/99. D. Failing suggested for both Metro and Paxton that the Notice to Contractor note the need for Caltrans to get access to the sites early for installation of monitoring equipment.	FYI			
011	Agenda Item 4 (Vector Issues); LWA reviewed the program, two components: Adult and larval monitoring. Caltrans and DHS to determine whether adult monitoring will continue after this year. To date there does not appear to be a significant difference between control and study sites for adult mosquito population. Reviewed abatement that has occurred at existing sites this past summer. Plaintiffs asked that Bill Walton further discuss the control site and treatment relationship in his report. DHS has completed a study plan which has tentatively been accepted by Caltrans and will be distributed to the Plaintiffs in the month of October. DHS has also done a survey of BMPs across the country relative to abatement/breeding issues. This report of findings should be available in December 1999. An attempt will be made to link the vector and RBF data bases. The field costs for vector work are included in OM&M costs.	FYI			
012	Agenda Item 5 (Biological Issues): RBF/Dudek reviewed the biological reports (July/August). It was noted that Caltrans is preparing a letter to the FWS to note that the biofilters at Palomar Airport Road and Carlsbad MS may attract the salt marsh skipper, an endangered species. A similar letter will be prepared if habitat suitable for T&E species is noted at the La Costa Wet basin. It was noted that a net may be installed at the La Costa infiltration basin to preclude waterfowl from transferring fairy shrimp to	FYI			

# MEETING MINUTES

Meeting Date: September 30, 1999

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ITEM	DESCRIPTION	STATUS	OPENED	DUE	ACTION FOR:
	the site. It was decided that biological costs should be kept separate, but not included in the O&M cost for the pilots at this time.				
013	Agenda Item 6 (Device Specific Issues): MW reviewed the changes to the 605/91 strip monitoring equipment requested by the CHP, and modifications to energy dissipators at the Cerritos MS, 5/605 605/91 and 605 Del Amo swales to preclude ponding. Drain plugs were not considered since sediment could accumulate and plug the drain holes, and energy dissipators were grouted instead. The monitoring equipment at the Los Flores MS was moved to accommodate a request from Caltrans personnel. The Altadena drain was increased from 2 to 6 inches in June. Erosion control seeding of bare areas will occur in November according to the MID. Bare areas on biofiltration swale side slopes will be seeded with erosion control mix and tackifier. Irrigation will be removed when vegetation becomes dormant.	FYI			
014	Agenda Item 7 (Saltgrass Report): RBF reviewed the status of the saltgrass and indicated that all sites have achieved the coverage required by the MID and are therefore, 'operational' and ready for monitoring as of October 1. The Plaintiffs requested that the recommendations contained in the Peer Review Report be incorporated into the MID. Caltrans indicated the recommendations would be incorporated, or an explanation given as to why the recommendation is not appropriate. Caltrans noted that non-native species would not be used for the biofilters.	New			RBF
015	Agenda Item 8 (OMM Update): RBF reviewed the changes to the OMM plan, and noted the revision schedule. The OMM plan has been updated, and the monitoring consultants have the proper direction to begin monitoring. Actual reproduction of the Volumes may not occur until about the first of November to ensure that changes are cross checked and allow time for reproduction. All references to detection limits in the OMM plan will be made consistent in terms of reporting limits, which are what the numbers in the plan represent. Non-stormwater considerations will be included at all appropriate places in OMM forms.	New			RBF
016	Agenda Item 8 (con't): The Plaintiffs questioned when the mid term report, noted in Volume 1 of the OMM would be available. Caltrans responded that the current reporting (data available on the web, the bi-weekly reports and the quarterly reports) fulfill this purpose. SD BayKeeper indicated that Caltrans must also evaluate whether and to what extent BMP retrofit is appropriate per the requirements of the Consent Decree. Caltrans responded that this question was the primary focus of the San Diego Water Quality Control Control Study (SDWQCS). The Plaintiffs do not feel that they have been a part of the SDWQCS and are 'out of the loop'. Caltrans indicated that the study has been in a hiatus pending the appointment of full time staff persons both in the District and at Headquarters. Caltrans agreed to meet with the Plaintiffs soon on the study. It was agreed that the mid-term report was an annual status report, presenting the study findings to date, and that a good job had been done of providing this information.	New			Caltrans
017	Agenda Item No. 9 (Water Quality Monitoring Preparedness): The monitoring status for each Consultant (MW and BC in District 7, KLI in District 11) was reviewed. Each consultant confirmed readiness to	FYI			

## MEETING MINUTES

Meeting Date: September 30, 1999

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ITEM	DESCRIPTION	STATUS	OPENED	DUE	ACTION FOR:
	monitor beginning October 1. SD BayKeeper noted that they take exception to the number of storms required for each site in District 11. It was agreed that pending the number of storms that could be collected this winter, the issue may be moot.				
018	Agenda Item No. 10 (Database): The database was reviewed and demonstrated for the Plaintiffs. Both the executable form and the data provided on the internet were reviewed. The suggestion was put forth to allow sorting on an individual site. The Plaintiffs noted that the OMM cost in District 7 was significantly higher than in District 11. They cautioned that construction and monitoring costs not be billed to O&M. It was agreed to further monitor this trend. The Plaintiffs further questioned why BMPs not built yet have O&M costs and were told that they were billed a share of training.	New			RBF
019	Agenda Item No. 12 (Closing): The next bi-weekly conference call was set for October 21, 1999 at 10 am. It was agreed that the bi-weekly calls would occur on Thursdays from this point forward. The next Quarterly Status Meeting was set for December 15 <sup>th</sup> .	FYI			

**APPENDIX B: OMM VOL II AND MEDIUM REPLACEMENT COMMENTS FROM  
STORMWATER MANAGEMENT**

# MEMO



2035 NE Columbia Blvd. Portland OR, 97211  
☎ 503.240.3393 ☎ 503.240.9553 🌐 stormwatermgmt.com

TO: Scott Taylor, P.E.

COMPANY: RBF Engineering

FROM: James Lenhart, P.E.

DATE: December 1, 1999

CC: File

RE: Kearney Mesa Maintenance

Per your request, we have prepared a cost estimate to replace the existing StormFilter cartridges located at the Kearney Mesa Maintenance Facility. However, we would like to have the opportunity to present some thoughts about why we believe the existing Perlite/Zeolite Media is best for this application.

- Based on the site conditions, we have made a recommendation that the perlite/zeolite media be used. The primary pollutants are anticipated to be TSS, O&G and some metals, probably Zinc and Copper. The leaf media can also address these pollutants but does contain residual nitrate nitrogen and ortho-phosphorus. As nitrates are a pollutant of concern in this area, we believe the current media configuration is the most appropriate for this application.
- The CSF Leaf media is a patented proprietary media whereas the present media is not. In correspondence with Caltrans they have stated they are reluctant to support or condone the use of equipment, which are only available from a single proprietary source. Therefore, why use a media that Caltrans would be reluctant to use on an on-going basis?
- Based on our experience with our technology and prior experiences with Caltrans sampling protocol, we know that providing an accurate representation of the facility operation is difficult. We are concerned that changing the media in the middle of the process will compound variables and reduce the population of the data set. The result will be a delay in the project or inconclusive results. This is of particular concern to us since we are not allowed to participate in the review of preliminary data or data interpretation for information collected on our product.
- Our interests are the same as the plaintiff in that we want a successful demonstration project. Accordingly, we invite them to contact us directly to discuss their concerns about the media type to aid them in their decision.

## Assumptions and Work Scope Cal-Trans San Diego 2057.01-3 Maintenance

### Assumptions:

1. Cal Trans personnel and equipment available to facilitate offloading of compost cartridges upon arrival via common carrier. Most likely a fork lift.
2. Cal Trans personnel and equipment available to load palletized ZeoPerl cartridge onto common carrier for return trip to Stormwater Management.
3. Cal Trans will provide facilities for onsite disposal of sediment and ZeoPerl media. A 10 CY drop box.
4. Cal Trans will sign Stormwater Management standard maintenance agreement.

### Scope of Work:

1. Remove 79 ZeoPerl cartridges.
2. Clean accumulated sediment from cartridge bays.

Post-It® Fax Note	7671	Date	12-2-99	Page	2
To	Scott Taylor	From	J. Lenhart		
Co./Dept.	RBF	Co.	SWM		
FAX	949-586-6531	Phone #	800-548-4667		
		Fax #			

3. Inspect vault interior and components.
4. Install 79 CSF cartridges.
5. Provide certification of completed maintenance to the system owner and presiding agency.

Work to be performed no sooner than three weeks from our receipt of signed maintenance agreement and is subject to our previously scheduled workload and our standard Holiday observances.

Above scope of work will be completed by Stormwater Management for a lump sum fee of \$11,320.00. Payment is due thirty days from completion of services.

If you have any questions, please call.

KINNETIC  
LABORATORIES  
INCORPORATED

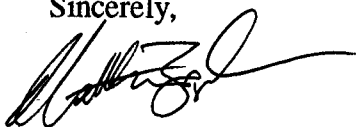
P.O. BOX 1040  
LABORATORY: 307 WASHINGTON STREET  
SANTA CRUZ, CALIFORNIA 95061  
(408) 457-3950  
FAX (408) 426-0405

Bill Whittenberg  
Robert Bein, William Frost and Assoc.  
14725 Alton Parkway  
Irvine, CA 92618-2069

Dear Bill,

Please find enclosed a copy of Stormwater Management's response to KLI's request for a written memorandum on OMM changes for the Kearny Mesa Maintenance Station StormFilter™. Also included is a new updated version of the Manufacturer's O&M which will be included as Section 7.0 of the StormFilter™ Appendix I-F. Thank you.

Sincerely,



Matthew Zapala  
Kinnetic Laboratories, Inc  
Environmental Scientist

**CALTRANS  
BMP RETROFIT PILOT PROGRAM**



*DISTRICT 11, SAN DIEGO*

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**BMP OPERATION, MAINTENANCE,  
AND MONITORING PLAN**

**VOLUME II**

**APPENDIX I-F  
COMPOST FILTERS**

*Storm Filter*

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**November 1998**



## 1.0 INTRODUCTION

The Caltrans Best Management Practice (BMP) Retrofit Pilot Program is a comprehensive water quality monitoring study to evaluate the removal of contaminants in stormwater runoff from Caltrans roads and facilities through a series of BMP pilot installations. The overall objectives of this portion of the program are to document BMP contaminant removal efficiency and technical feasibility.

*Storm Filters*  
This Appendix of the Operations, Maintenance, and Monitoring Plan (OMM) applies to ~~Compost Filters (CF)~~. Refer to the consultant's monitoring equipment manuals and stormwater monitoring Standard Operating Procedures (SOPs) for details related to equipment installation, equipment maintenance, and storm monitoring. Maintenance, safety, documentation, and storm monitoring tasks will be carried out according to the procedures detailed in this plan. Additional measures may be necessary due to unforeseen or temporary changes to the work environment at these sites.

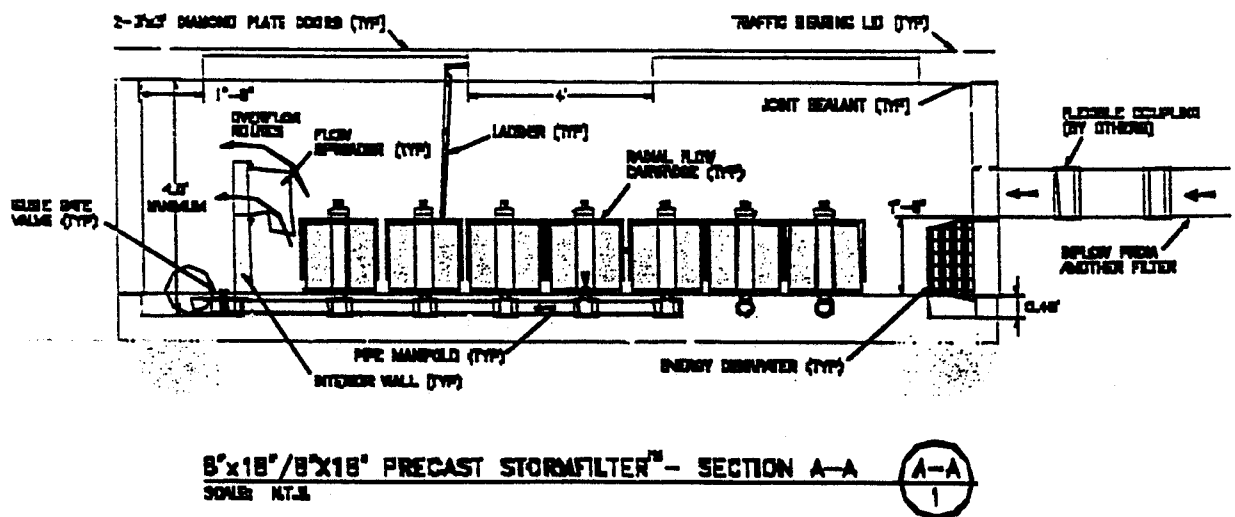
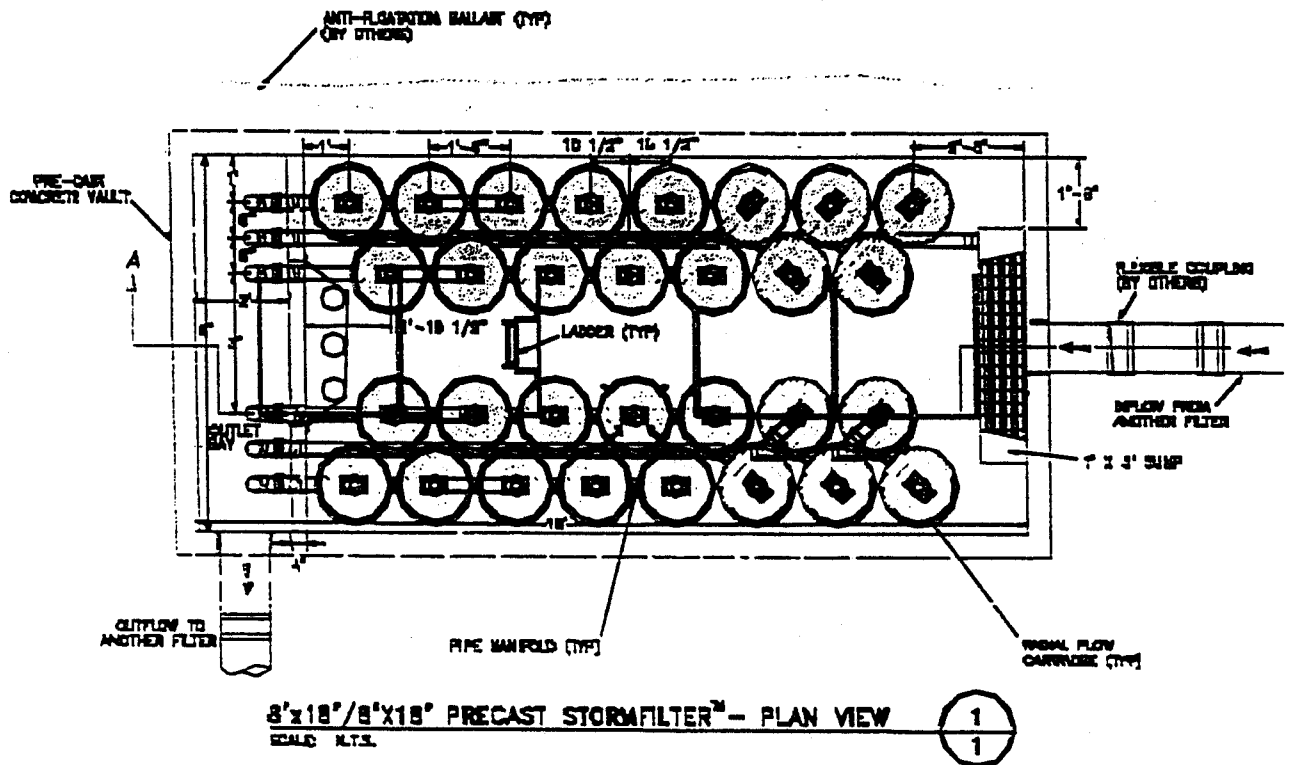
### 1.1 Retrofit BMP Description

*Various Filtration media*  
*SF*  
A CF is a media filter that uses ~~leaf compost~~ as a filter medium. This type of filter removes pollutants through filtration, ion exchange, adsorption, and microbial degradation. CFs are usually multi-chambered with each chamber containing a series of filter cartridges. Storm runoff percolates horizontally through each filter cartridge. The filter cartridges consist of a hood, outer screen, air relief valve, ~~compost~~ media, and a porous center tube. The following is a description of the cartridge "priming system": treated stormwater collects in the center tube until the water depth reaches ~~22-inches~~ and activates a float/ball valve mechanism. Displacement of the float/ball valve forces entrapped air within the hood through the relief valve. This causes a siphon, which increases the flow potential through the filter media. Filtered water collects in a manifold to exit the BMP. Overflow and bypass capabilities are other common components of a CF. ~~Media filters should not be installed at locations with a large sedimentation potential.~~ As a visual aide several figures have been included on the following pages to illustrate the ~~compost~~ filter components.

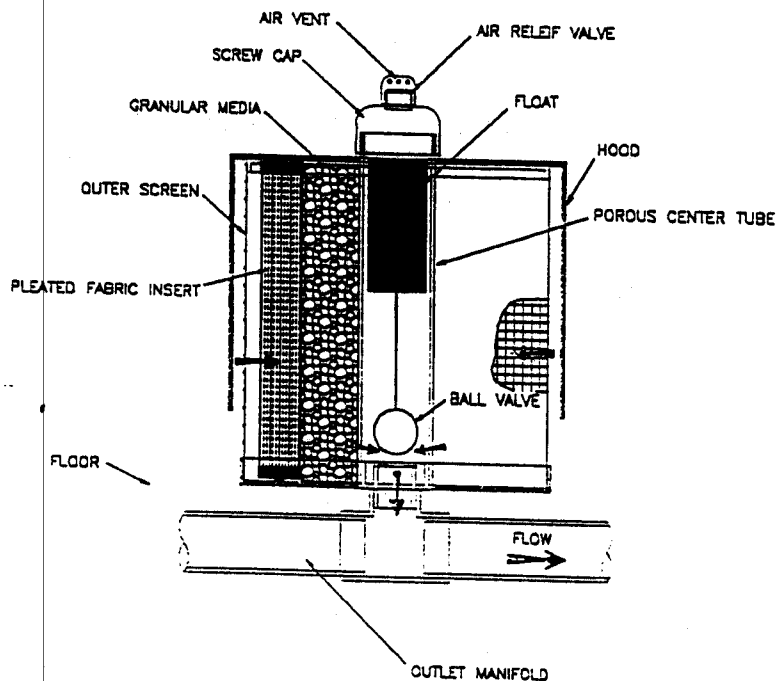
*Upstream settling device are recommended where a large sedimentation potential exists.*

*StormFilter*

Figure 1.1  
~~Compost Media Filter~~ Plan View and Section View



**Figure 1.2**  
**Fiter Cartridge Section View**



*SF*  
The ~~CF~~ BMP was designed to treat runoff up to a 1-year, 24-hour storm event or less storm events. Some runoff from larger storms will bypass the facility. The larger the storm the more runoff is bypassed. Optimal treatment will occur for longer, less intense storms. Important considerations in the design, operation, maintenance, and management of media filters can be found in a guidance manual prepared for the U.S. EPA (Watershed Management Institute, Inc., 1997).

*SF*  
The ~~CF~~ is a confined system located underground. Thus, many concerns, such as controlling vectors, vegetation, and nuisance organisms associated with other BMP types, are minimized.

## 1.2 Evaluating BMP Performance

*SF*  
To effectively evaluate the performance of a ~~CF~~ pilot facility, the following objectives will be met:

- Determine the quantity of runoff treated by the ~~CF~~. *SF*
- Determine the reduction (or change) in analyte concentrations between the influent to and the effluent from the ~~CF~~. *SF*



- Determine and document the level of effort required to maintain the ~~CF~~<sup>SF</sup> at optimal effectiveness.
- Determine and document the level of effort required to control vectors of human disease and nuisance insects, and rodents at the BMP.
- Determine and document BMP performance evaluation criteria .
- Determine and document BMP performance evaluation criteria relative to the qualitative benefits.

To effectively estimate the removal of contaminants from a ~~CF~~<sup>SF</sup>, the quantity and quality of runoff entering the ~~CF~~<sup>SF</sup> will be compared to the quantity and quality of water discharged from the ~~CF~~<sup>SF</sup>. These data will allow a direct estimate of the total reduction in mass loadings for a variety of contaminants.

The effectiveness of a ~~CF~~<sup>SF</sup> is also related to the implementation of strict maintenance procedures and the documentation of empirical observations. Items such as maintenance of storage volumes, discharge rates, sediment and trash build-up, and clogging may directly effect the performance of a ~~CF~~<sup>SF</sup>.

A ~~CF~~<sup>SF</sup> retains water for varying periods of time, and it contains a damp and dark environment. As such, the potential to produce vectors of human disease and nuisance insects and rodents exists.

### 1.3 Target Storm Events for BMP Performance

Significant storms producing 0.10 inches or greater of rain during a 4-hour period will be targeted for monitoring during the 1998/1999 and 1999/2000 storm seasons. Storms that have intermittent periods of rainfall will be monitored only during rainfall periods that are not separated by more than a 2-hour period without rainfall. Storm water samples will be collected from up to eight storms over a two-year period with up to four storm events each during year, weather permitting. Storms targeted for sampling will be separated by a minimum of 48 hours (72 hours preferably). The facility will be inspected per the guidelines given in Section 4.0 of the *Field Guidance Notebook (FGN)*, which include a mandatory inspection after every storm with rainfall greater than 0.50 inch.

A decision tree (Figure 1.1) will be used as a guide to track and monitor incoming storms and alert and mobilize field crews. The ultimate decision to go or not to go for a particular event will be made in consultation with Caltrans.



## 1.4 Data Collection and Compilation

### 1.4.1 Data Requirements

The following data will be collected to assess the performance and maintenance aspects of a CF:

- Water quality and quantity data of runoff into and discharge from the Swale from flow-composite samples and first-flush (as soon as possible after the start of runoff) grab samples for at least four storm events, weather permitting, from the 1998/1999 and 1999/2000 storm seasons. *? monitored f Swale*
- Rainfall data, recorded as a function of time, from all rainfall events during the study period.
- Observations of water quality, traffic, rainfall, antecedent conditions, spills, etc.
- Documentation records of inspections and maintenance activities performed.
- Mosquito and rodent monitoring data.
- Records of vector control measures taken.

### 1.4.2 Data Management

The consultant will be responsible for data management. Overall management of the data will be consistent with established Caltrans procedures for stormwater monitoring projects and this manual.

The Sample Control Section of Consultant will be responsible for tracking the analytical process to assure that laboratories are meeting the required turnaround times and are providing a complete deliverable package. Sample Control will also be responsible for accumulating copies of site visit logs, inspection logs, facility maintenance records, vector control sampling data, and logged rainfall and hydrographic data. Sample Control will receive the original hard and electronic copies from the laboratory, system managers, and field crews, and verify completeness and log dates of receipt. A copy of the data sets and log sheets will be filed in Sample Control's central filing system and another copy will be provided to the Database Manager. The originals will then be transferred to the Task Order Manager and filed with all other project documentation to maintain complete project records.

Laboratories, system managers, and vector control crews will be requested to provide data in both hard copy and electronic formats. The forms of electronic submittals will be provided to the laboratories to ensure that the files can be imported into the project



database with a minimum of editing. A relational database will be used for all data. Laboratory data will be maintained and managed using Microsoft Excel® and Microsoft Access®. Files from the influent and effluent monitoring stations will be stored in the same database system and be linked to the laboratory database. The sampling system files will include rainfall, sampling, and flow data. Site characteristics will be stored in a separate file and linked to the both the chemical and sampling system files to enable useful data queries.

Data will be submitted to Caltrans based on "Caltrans Statewide Data Management Plan—Data Reported Protocol and Database," a technical memorandum dated 23 April 1998 from Larry Walker Associates to all task order managers.

#### ***1.4.3 Data Analysis***

Differences in storm characteristics, which can lead to differences in analyte loadings of monitored storm events, will be evaluated for each year of monitoring. Specific storm parameters such as total rainfall, average intensity, peak intensity, and antecedent conditions will be measured to determine if these parameters correlate with analyte concentrations and loads in stormwater discharges.

Sampling results for the influent and effluent sites will be characterized by descriptive statistics. Statistical comparisons between the influent and effluent will also be performed. Event Mean Concentrations (EMCs) will be measured for each water quality parameter at both sampling points. Annual statistics based upon assumed log-normal distributions also will be calculated for each water quality parameter. Subsequent to characterization of the stormwater runoff into and from a CF, statistical comparisons will be performed to determine differences between the quality of the influent and the quality of the effluent.

Differences in mean concentrations of analytes between storm events and locations will be considered to be statistically significant at  $P \leq 0.10$ . Although the acceptable level of alpha error is typically set at  $P \leq 0.05$ , this decision level was increased due to the relatively high coefficients of variation (CV) encountered with stormwater data.

Care will be taken to guard against false positive or negatives, so that widely varying storm event characteristics will not result in misinterpretation of the stormwater runoff data.

Widely varying storm event characteristics will be considered when evaluating BMP efficiencies based on stormwater runoff data. Empirical observations, maintenance activities, and vector control activities will be compiled and compared to water quality and quantity data.



### 1.5 Encroachment Permit and Restrictions

Visitation to a <sup>SF</sup>CF requires a Caltrans Encroachment Permit. Copies of the CF permits are located in Tab 9 of the *FGN*. These permits list access and safety requirements along with any restrictions. The respective Caltrans District Encroachment Permit Office will be contacted for further information and direction (phone numbers can be found under Tab 2 in the *FGN* portion of the Volume II OMM Plan).



## 2.0 OPERATION AND MAINTENANCE

### 2.1 Operation and Maintenance Needs

As suggested in the manufacturer's operation and maintenance guidelines (Stormwater Management Incorporated) the operation and maintenance needs of a compost media filter facility are:

- Removal of trash and debris from flow control and other structures within the facility.
- Removal of excessive sediment deposits which threaten to clog the facility.
- Removal of standing water that becomes a vector control problem.
- Replacement of cartridges annually or when they become clogged.
- Flushing drainage system piping.
- Removal of all graffiti and debris.
- Painting.
- Preventative maintenance on equipment.

### 2.2 Inspection Frequency

The facility will be inspected and all inspection visits will be completely documented (refer to Section 2.8):

- Once a month at a minimum.
- After every large storm (after every storm monitored or those with more than 0.5 inches of precipitation).
- On a weekly basis during extended periods of wet weather.

### 2.3 Aesthetic and Functional Maintenance

Functional maintenance is important for performance and safety reasons while aesthetic maintenance is important for public acceptance of stormwater facilities.

Both forms of maintenance will be combined into an overall Stormwater Management System Maintenance Program. Maintenance activities will be carried out by the consultant or a subcontractor of consultant. Maintenance items are included in the checklist/log forms found in Tab 4 and 5. All maintenance activities will conform to Caltrans practices.



### **2.3.1 Aesthetic Maintenance**

The following activities will be included in the aesthetic maintenance program:

- **Graffiti Removal.** Graffiti will be removed in a timely manner to improve the appearance of the filter and it's related monitoring equipment, and to discourage additional graffiti or other acts of vandalism.
- **Grass Trimming.** Trimming of grass will be done around fences and sampling structures.

### **2.3.2 Functional Maintenance**

Functional maintenance has two components:

- (1) Preventive maintenance.
- (2) Corrective maintenance.

#### *Preventive Maintenance*

Preventive maintenance that will be done on a regular basis is detailed in the checklists contained in Section 2.8. Preventive maintenance activities to be performed on the compost filter are:

- **Trash and Debris.** A regularly scheduled program of debris and trash removal will be conducted.
- **Sediment Removal.** Sediments will be removed to insure adequate flow and filtration through the compost canisters. Disposal of sediments is discussed in Section 2.6 and will comply with local, county, state, or federal requirements.
- **Removal of Standing Water.** Standing water will be removed if it becomes a vector control problem.
- **Facility Maintenance.** A maintenance program for monitoring the overall performance of the storm water management system will be established according to the designers recommendations.

#### *Corrective Maintenance*

Corrective maintenance is required on an emergency or non-routine basis to correct problems and to restore the intended operation and safe function of the compost filter. Corrective maintenance activities include the following:



- **Removal of Debris and Sediment.** Visibly contaminated sediment, debris, and trash, which clog the facility or possibly contribute to elevated pollutant levels in the effluent, will be removed immediately and properly disposed of. Temporary arrangements will be made for handling the sediments until a permanent arrangement is made.
- **Structural Repairs.** Repairs to any structural component of the ~~compost~~ filter will be made promptly (e.g., within 10 working days). Designers and contractors will conduct repairs where structural damage has occurred.
- **Cartridge Replacement.** Procedures outlined in the StormFilter manual will be followed, ~~as to backflushing versus replacement.~~ The results will be reported followed by a maintenance decision.
- **Flushing drainage system piping.** The drainage piping will be flushed to ensure adequate flow through the system.
- **General Facility Maintenance.** In addition to the above elements of corrective maintenance, general corrective maintenance will address the overall facility and its associated components. If corrective maintenance is being done to one component, other components will be inspected to see if maintenance is needed.

#### 2.4 Maintenance Frequency

Table 2.1 lists the schedule of maintenance activities to be implemented at a ~~compost~~ <sup>the</sup> filter.

Table 2.1  
Schedule of Maintenance Activities at Compost Media Filter

Maintenance Activity	Schedule
Filter Cartridge replacement.	Procedures outlined in the StormFilter manual will be followed <del>as to backflushing versus replacement.</del> The results will be reported followed by a maintenance decision.
Removal of sediment from vault floors.	As needed to prevent sediment from clogging <del>compost canisters.</del>
Removal of standing water.	At the direction of Vector control specialists
Trash and Debris Removal.	Once a week during the wet season, and once per month during the dry season, or when facility performance structures are affected.

Backflushing  
is  
no longer  
performed.



Table 2.1 (continued)  
Schedule of Maintenance Activities at Compost Media Filter

Maintenance Activity	Schedule
Flushing drainage system piping.	To ensure adequate flow through system.
Cleaning of flumes, channels, orifices, and/or cracks	After every large storm ( $>0.5''$ ) or once per month in the absence of rain.
Maintenance of Storm Monitoring Equipment.	After every storm or once per month in the absence of rain.
Maintenance of Fences, Gates, Locks, and Enclosures.	When site security may be breached
Painting.	Yearly or in the presence of graffiti.

## 2.5 Equipment, Resources, and Tools Needed

All resources and the following equipment are needed by inspection personnel:

- Flashlight.
- Crowbar.
- Tape measure and other measuring device (survey rod), such as a clear PVC tube, to determine sediment accumulation depths and / or visible contamination depths.
- Local erosion, sediment control, or stormwater management handbooks.
- Rain and foul weather gear and other personal protection equipment (PPE).
- Safety gear (see Appendix G).
- Confined space entry gear (where appropriate).
- Trash Removal Equipment.
- This Appendix and supporting Filed Guidance Notebook.
- Logbook containing copies of necessary inspection reports and forms.
- Encroachment permit.
- Business cards or other identification.
- Camera to document field conditions.

Except for the items contained on site, the maintenance contractors will supply all equipment, tools, and resources required for maintenance activities at the compost filter. At a minimum, these contractors will supply the following:

- Shovels, picks, rakes, wheel barrows, and other hand tools.
- Mechanics Tools.
- Concrete Tools.
- Painting Equipment (brushes, rollers, and sprayers).
- tape measures and sediment probes.



- Safety equipment (gloves, boots, hard hats, reflective vests, safety glasses, traffic control lighting, and confined space entry equipment).
- Pumps.
- Camera with film.

The consultants will supply to the maintenance contractors:

- This Appendix, FGN, and approved BMP facility plans.
- Encroachment Permit.
- Logbook containing maintenance and safety logs.

## 2.6 Debris and Sediment Disposal

Hazardous waste generated at the ~~compost~~ filter is ultimately the responsibility of Caltrans. Consultants responsible for operating, maintaining, and monitoring the filter will be responsible for removal, testing, and disposal of the waste material. Disposal of sediment, debris, and trash will comply with all local, county, state, and federal waste control programs. Table 2.2 shows a few of the possible disposal services for waste material.

Table 2.2  
Waste Disposal Services in Southern California

Laidlaw / Rollins (OPC) 5765 Alba Street Los Angeles, CA 92011 Ph: (213) 585-5063 Fax: (213) 589 5443 EPA: CAD050806850	Laidlaw Environmental Services 5295 S. Garvey Rd. Westmoreland, CA 92281 Ph: (619) 334-9400 Fax: (619) 344-9405 EPA: CAD000633164
TSM Recovery and Recycling 3422 W. Pico Blvd. Los Angeles, CA 90019 Ph: (213) 735-9443 EPA: CAD108040858	Pacific Resource Recovery 3150 E. Pico Blvd. Los Angeles, CA 90023 Ph: (800) 499-7145 Fax: (213) 780-9940 EPA: CAD008252405
Demmenno Kerdoon Environmental Services 3650 E. 26 <sup>th</sup> Street Los Angeles, CA 90023 Ph: (213) 268-5056 Fax: (213) 268-9672 EPA: CAD080033681	U.S. Filter Recovery Services 5375 S. Boyle Ave. Vernon, CA 99058 Ph: (213) 277-1500 Fax: (213) 588-0094 EPA: CAD097030993

Prior to disposal, removed sediments will be inspected to determine the extent and type of chemical contamination. Evidence of oil and grease, antifreeze, solvents, fuel, hydrogen sulfide, and any other noxious substance will be noted. Observations will be used to determine if more than the standard analyte list is required. The standard analyte list (Table 5.2) is based on highway contaminants that have potential to exceed California Code of Regulations (CCR), Title 22 hazardous waste criteria (State of California, 1985). Methods used to sample sediments are discussed in Subsection 5.7. While analytical

October 11, 1999

Matt Zapala  
Kinnetic Laboratories, Inc.  
307 Washington Street  
Santa Cruz, CA 95060

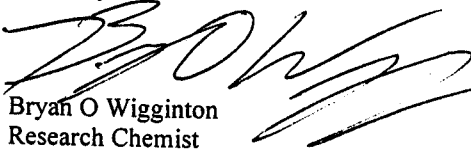
Re: OMM Manual Comments and StormFilter™ Design Manual

Dear Matt:

I hope these comments are sufficient. I kept a full copy of the document so we can discuss anything that is not clear. I've also included a new copy of our design manual. This should point out the discrepancies of the backflushing. Currently, we perform a full cartridge replacement and accumulated sediment removal. Backflushing never proved to be very effective and was time consuming (i.e. a waste of money).

Talk to you soon.

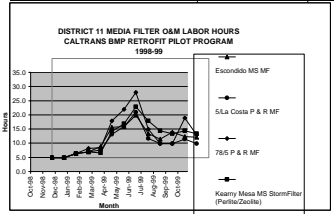
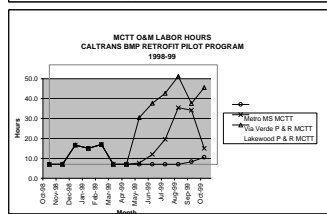
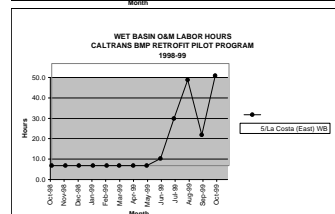
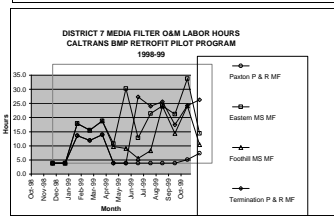
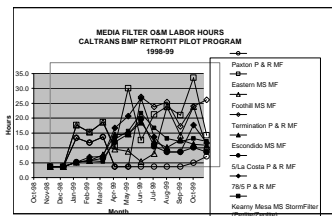
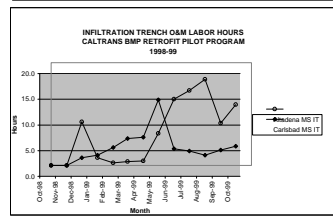
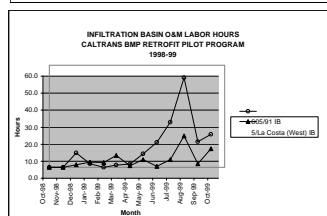
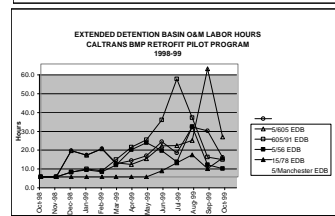
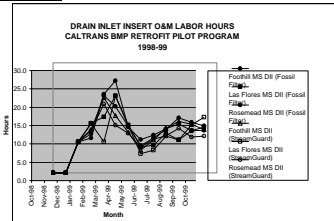
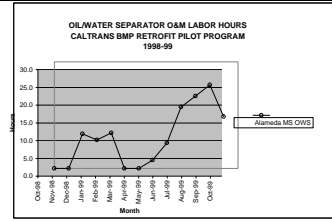
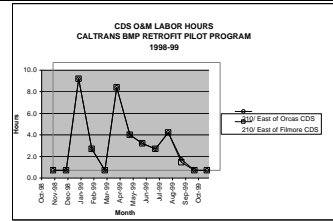
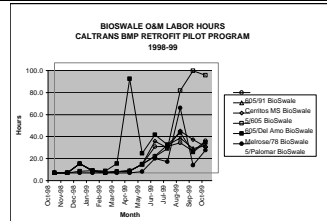
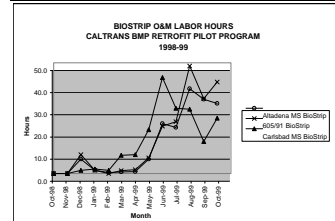
Sincerely,

  
Bryan O Wigginton  
Research Chemist

## **APPENDIX C: OMM COST SUMMARY**

### GRAPHS OF LABOR HOURS

### GRAPHS OF LABOR HOURS

[illegible]

## **Notes:**

**All spreadsheets reflects costs for the month of October, 1999.**

### **Brown and Caldwell**

#### **Assumptions/Clarifications:**

1. Maintenance costs commence following 100% construction completion.
2. "General program support/Follow-up" and "Encroachment Permits" costs are shared among all BMPs (10% @ 10 locations).
3. VCD labor costs include VCD travel time, except for Foothill and Via Verde (SGV VCD sites).  
SGVVCD mileage costs shown as "VCD Travel Costs" in ODC detail. GLAVCD bills no mileage costs.
4. Company vehicle costs shown as rental/lease rather than hourly rate (company cost per mile).

## **Notes:**

**All spreadsheets reflects costs through the month of September, 1999.**

### **Brown and Caldwell**

#### *Assumptions/Clarifications:*

1. Maintenance costs commence following 100% construction completion.
2. October-February administration costs are shared as 12.5% for operational BMPs (4) and as 8.3% for non-operational BMPs (6).
3. Confined-space training not included.
4. Vector maintenance costs commence in May.
5. VCD labor costs include VCD travel time, except for Foothill and Via Verde (SGV VCD sites)  
Also note "VCD Travel Costs" in ODC detail.
6. Company vehicle costs shown as rental/lease rather than hourly rate (company cost per mile).
7. Costs have been updated from previous submittals. Hourly rates have been slightly modified.  
Administrative hours during December 1998 - February 1999 are reduced by approximately half to account for project ramp up labor not purely associated with O&M (budgeting, contracting, staff management, etc.).

### **KLI**

Reproduction costs were added for past months for the cost of producing the Maintenance Logbooks for last season.

Native Landscape Inc. (a subcontractor) has not yet billed KLI for materials for the month of August. An irrigation extension was built at the La Costa Wet Basin; the labor hours have been included, but the irrigation materials will be included at a later date.

			DISTRICT 7																				DISTRICT 11																																																																																																																																																																																																																																																																																																	
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	BMP Type/ Site ID	BioStrips																								BioSwales																								CDS Units																								DILs (Fossil Filter)																								DILs (StreamGuard)																								Extended Detention Basins																								Inf. Basins																								Inf. Trenches																								Media Filters (Sand)																								Storm Filter																								MCTTs																								OWS																								WB																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
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## **Notes:**

**All spreadsheets reflects costs for the month of October, 1999.**

### **Brown and Caldwell**

#### **Assumptions/Clarifications:**

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2. "General program support/Follow-up" and "Encroachment Permits" costs are shared among all BMPs (10% @ 10 locations).
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SGVVCD mileage costs shown as "VCD Travel Costs" in ODC detail. GLAVCD bills no mileage costs.
4. Company vehicle costs shown as rental/lease rather than hourly rate (company cost per mile).

**BMP Retrofit Pilot Program  
Maintenance Operation  
Cost Accounting Summary, 1999-00**

[illegible]

BMP Retrofit Pilot Program  
Maintenance Operation  
Cost Accounting Summary, 1999-00

BMP Type/ Site ID	BioStrips		BioSwales		CDS Units		DIs (Fossil Filter)		DIs (StreamGuard)		Extended Detention Basins		Inf. Basins		Inf. Trenches		Media Filters (Sand)		Storm Filter	MCTTs		OWS	WB																								
	73211b	73222a	112207a	73222b	73223	73224	73225	112205	112206	732102	732103	732104	73217a	73218b	73218c	73219a	73219b	74101	74102	111101	111102	111105	73101	111103	73211a	112207b	74103	74204	112202	112203	112204	112201	74104	74206	74208	74201	111104										
	Atlanta MS Biostrip	60591 Biostrip	Carbondale MS Biostrip	60591 BioSwale	Curriton MS BioSwale	5/065 BioSwale	60591 Anno BioSwale	McIntosh MS BioSwale	5/Plumtree BioSwale	210 East of Ocean CDS	210 East of Phoenix CDS	Fossilhill MS DI (Fossil Filter)	La Flores MS DI (Fossil Filter)	Roanoke MS DI (Fossil Filter)	Fossilhill MS DI (StreamGuard)	La Flores MS DI (StreamGuard)	Roanoke MS DI (StreamGuard)	5/065 EDB	60591 EDB	5/6 EDB	1578 EDB	5/Manchester EDB	60591 IB	5/La Costa (West) IB	Atlanta MS IT	Carbondale MS IT	Paxon P & R MF	Eastern MS MF	Fossilhill MS MF	Termination P & R MF	Escudilla MS MF	5/La Costa P & R MF	785 P & R MF	Kearney MS MS Stormwater (Perforated)	Micro MS MCTT	Via Verde P & R MCTT	Lakewood P & R MCTT	Alameda MS OWS	5/La Costa (East) WB								
Hours/Dollars per Month	labor hrs	labor \$	equip \$	direct costs \$	total \$	labor hrs	labor \$	equip \$	direct costs \$	total \$	labor hrs	labor \$	equip \$	direct costs \$	total \$	labor hrs	labor \$	equip \$	direct costs \$	total \$	labor hrs	labor \$	equip \$	direct costs \$	total \$	labor hrs	labor \$	equip \$	direct costs \$	total \$	labor hrs	labor \$	equip \$	direct costs \$	total \$	labor hrs	labor \$	equip \$	direct costs \$	total \$	labor hrs	labor \$	equip \$	direct costs \$	total \$		
1999	October	31	41.3	25.0	29.1	24.6	23.5	88.8	27.5	20.5	0.0	0.0	12.2	12.5	11.6	11.8	15.2	10.1	10.3	21.2	9.3	4.5	10.0	19.4	11.0	11.0	3.8	3.5	10.0	6.5	22.5	7.3	5.0	8.0	8.5	3.5	8.0	38.6	14.6	44.0							
	November	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
	December	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
	January	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	February	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	March	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	April	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	June	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	July	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	August	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	September	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1999/00 Totals to Date	labor hrs	31	41.3	25.0	29.1	24.6	23.5	88.8	27.5	20.5	0.0	0.0	12.2	12.5	11.6	11.8	15.2	10.1	10.3	21.2	9.3	4.5	10.0	19.4	11.0	11.0	3.8	3.5	10.0	6.5	22.5	7.3	5.0	8.0	8.5	3.5	8.0	38.6	14.6	44.0							
	labor \$	\$2,764	\$2,754	\$1,523	\$2,081	\$1,812	\$1,833	\$6,280	\$1,666	\$1,406	\$0	\$0	\$1,221	\$1,226	\$1,085	\$1,134	\$1,556	\$970	\$882	\$1,374	\$735	\$329	\$895	\$1,618	\$654	\$1,153	\$347	\$420	\$894	\$707	\$1,466	\$555	\$421	\$656	\$569	\$420	\$797	\$2,170	\$1,086	\$2,276							
	equip \$	\$0	\$0	\$0	\$0	\$0	\$0	\$109	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
direct costs \$	\$50	\$81	\$802	\$81	\$71	\$50	\$50	\$802	\$1,537	\$0	\$0	\$50	\$50	\$50	\$50	\$50	\$50	\$65	\$80	\$55	\$55	\$55	\$50	\$0	\$26	\$55	\$0	\$65	\$68	\$65	\$55	\$55	\$55	\$55	\$55	\$55	\$55	\$55	\$55	\$55	\$55	\$55	\$55	\$55	\$55	\$55	\$55
total \$	\$2,314	\$2,836	\$2,325	\$2,162	\$1,883	\$1,883	\$6,499	\$2,468	\$2,942	\$0	\$0	\$1,271	\$1,276	\$1,135	\$1,184	\$1,606	\$1,020	\$947	\$1,454	\$790	\$384	\$950	\$1,667	\$654	\$1,179	\$402	\$420	\$959	\$773	\$1,532	\$610	\$476	\$711	\$624	\$420	\$1,002	\$2,359	\$1,151	\$2,331								
Site Operational Date	8/4/99	8/4/99	6/24/99	8/4/99	8/4/99	8/4/99	8/4/99	6/24/99	6/24/99	3/7/00	3/7/00	1/22/99	1/22/99	1/22/99	1/22/99	1/22/99	2/24/99	2/22/99	1/24/99	1/24/99	6/24/99	4/9/99	Suspended	8/4/99	6/24/99	7/14/00	2/15/99	3/8/99	5/17/99	2/16/99	2/24/99	3/1/00	2/16/99	7/7/00	5/7/99	5/7/99	5/7/99	6/24/99									

## **APPENDIX D: ADULT MOSQUITO AND MIDGE MONITORING REPORT**

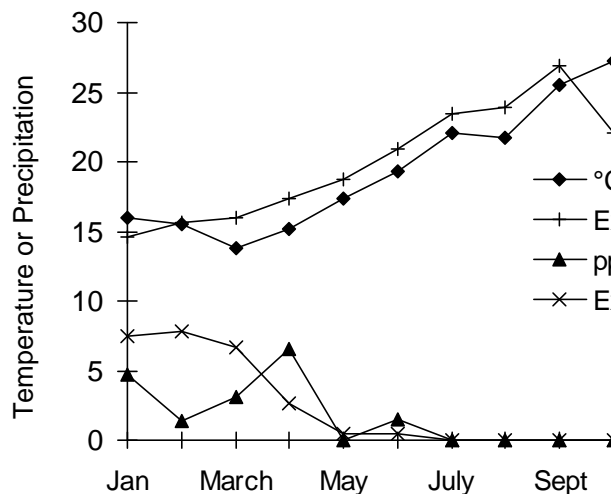
## Quarterly Report on Adult Mosquito and Midge Monitoring at Caltrans District 7 and 11 Stormwater BMP Retrofit Sites: 4rd quarter 1999 (2 Sept. - 20 Nov.)

Prepared by: William Walton, Department of Entomology, University of California, Riverside, CA 92521

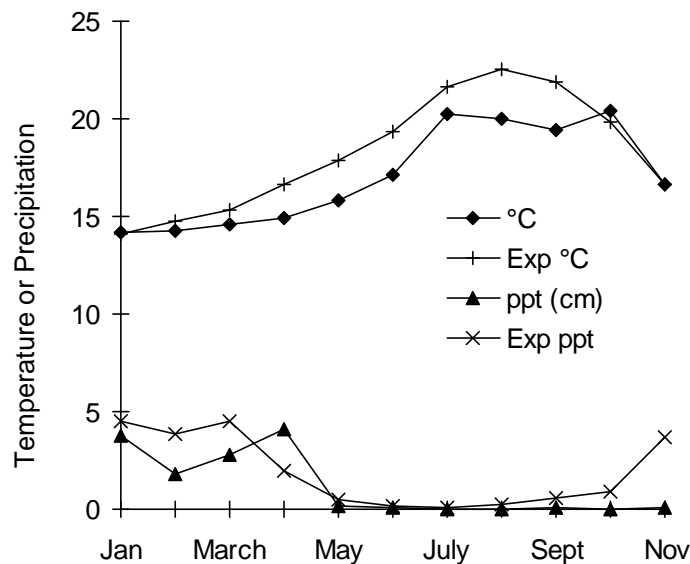
### Temperature and Rainfall

The weather in southern California during the fourth quarter of 1999 was slightly cooler than average in September and warmer than average in October. In July, the National Weather Service (NWS) moved the downtown weather station from the LA Civic Center to the University of Southern California (USC); summary data are currently not available for November at the downtown site in Los Angeles. Mean monthly air temperatures in Los Angeles for September were approximately 2.5 °C cooler than normal (comparison of long-term averages for the old LA Civic Center site to the monthly mean for the new USC site); however, long-term averages for the new USC weather station are not available. Rainfall in southern California is typically low during the late summer and autumn; 1999 was not unusual. Measurable amounts of rainfall did not occur at the NWS downtown Los Angeles weather station.

Monthly mean air temperatures in San Diego from September through mid-November 1999 were approximately 2.5°C cooler than normal in September, 0.61°C warmer than normal in October, and at the long-term average during the first half of November. Precipitation in San Diego was below normal decreasing from 0.56 cm below normal during September to 3.58 cm below normal during early November.



*Air temperature (°C) and precipitation (cm) at downtown Los Angeles plotted as monthly means for 1999 and long-term averages (Exp °C or Exp ppt) compiled by the National Weather Service.*



*Air temperature (°C) and precipitation (cm) at Lindbergh Field, San Diego plotted as monthly means for 1999 and long-term averages (Exp °C or Exp ppt) compiled by the National Weather Service.*

### Host-seeking Mosquitoes

Host-seeking mosquito populations sites were at low levels, typically < 5 individuals per trap night, at most of the stormwater BMP sites throughout the late summer and autumn 1999. Low numbers of host-seeking mosquitoes also were collected at the “control” sites; host-seeking females were not collected on most nights. Host-seeking mosquito activity during the fourth quarter was generally at the lowest levels to date at sites in Districts 7 and 11.

Increased host-seeking activity was observed on September 8 at site 73102 (10 individuals) and on September 22 at sites 73103 (site 4), 73218, 74201 and 74104. The mosquitoes collected were predominantly *Culex quinquefasciatus*, a mosquito that uses standing water for developmental sites. Nevertheless, the number of individuals collected was low compared to previous collections.

### Gravid Mosquitoes

The abundance of gravid mosquitoes at BMP sites during the fourth quarter 1999 was lower than during the third quarter. Gravid mosquito activity was consistently high at the Alameda MS (site 74201) and the Metro MS (site 74104) throughout most of September and October. Sporadic peaks in activity (> 10 individuals per night) were also noted at sites 73101, 73103, 73218 and 74206. Catches of gravid mosquitoes were predominantly *Cx. quinquefasciatus*.

Catches of gravid mosquitoes at San Diego sites 112205, 111102, and 112202 (> 8 individuals per night) in mid October were relatively higher than on other dates within this quarter and at other sites. For the latter sites, gravid mosquito activity was low during the dry period of early autumn.

### **Midges and Other Flies**

The abundance of midges at the stormwater BMP retrofit sites during the 4th quarter 1999 remained low suggesting that the operational BMP sites were not producing chironomid midges in significant quantities. Midges were not collected at most sites in both District 7 and District 11.

Psychodid (moth flies) abundance was particularly high ( $\leq 540$  individuals per night) at several sites in District 11: 111101, 111103, 112201, 112202 and 112205. Moth flies are commonly associated with decaying organic matter, heavily saturated mud and sand, and moss and algae near flowing water. Unlike some Old World and New World tropical and subtropical species in this family which inflict painful bites and transmit pathogens that cause cutaneous lesions/ulcers and visceral leishmaniasis, the species found in California are not known to transmit pathogens causing diseases in humans. Moth flies could be utilizing media filters and mud near culverts as developmental sites.

## **APPENDIX E: DHS STUDY PLAN AND MEMOS**

## Memorandum

Date: November 30, 1999

To: Dean Messer, Ph.D.  
Larry Walker and Associates  
509 4<sup>th</sup> Street  
Davis, CA 95616

From: Vector-Borne Disease Section  
601 North 7<sup>th</sup> Street, MS 486  
P.O. Box 942732  
Sacramento, CA 94234-7320

Re: Changes to the BMP Sampling Plan

The BMP sampling strategy outlined in the Mosquito Study plan developed by VBDS has been slightly modified with regard to site designation. The BMP sites designated as primary in Appendix 1 of the study plan has been expanded to encompass all sites. The modification is necessary to maintain flexibility in the choice of different statistical methods. The ongoing BMP design changes by CalTrans to remove water pollutants introduces new variables in our experimental design. This modification interferes with sampling and data analysis strategies that would require a larger data set to draw reliable conclusions. The decision to sample all the BMPs is appropriate in minimizing such a statistical quandary during the analytical phase of the study.

The study plan remains unchanged with the exception of the primary site designation noted herein.

If you require further information, please contact J. Wakoli Wekesa, Ph.D., or Jeanne-Marie Lane at (909) 937-3448.

# **BMP Mosquito Production Study**

## **Vector-Borne Disease Section California Department of Health Services**

### **Overview and Objectives**

The California Department of Transportation (Caltrans) is currently completing development of the Stormwater Best Management Practice (BMP) Retrofit Pilot Program in Los Angeles (Caltrans District 7) and San Diego (District 11) counties. The primary objectives of this project are to determine the pollutant removal efficiency of the BMPs, assess their operational and maintenance requirements, and monitor and abate mosquitoes that pose a potential threat to public health. The purpose of this report is to outline the experimental design for determining which BMP designs are least conducive for mosquito production. This study will involve sampling of mosquito larvae and pupae from 34 BMPs located in Los Angeles and San Diego counties for a two-year period beginning in the summer of 1999. This study will involve several collaborating agencies. Local vector control districts that have jurisdiction in the region where the BMPs are located will conduct sampling of immature mosquitoes. The role of the California Department of Health Services/Vector Borne Disease Section (DHS/VBDS) is to coordinate the efforts of the vector control districts and incorporate all the data generated into a database. DHS/VBDS will also directly monitor biological, physical, and chemical parameters such as vegetation type and density, predator occurrence, and water quality for correlation with mosquito population estimates.

### **Rationale and Introduction**

The climate in southern California is conducive to mosquito production and pathogen transmission. Abatement of mosquitoes is of importance to reduce their nuisance and transmission of disease-causing pathogens (e.g., encephalitis virus, dog

heartworm, and malaria) to humans and animals. The increase in urban population and the addition of new sources of standing water in southern California creates a potential for proliferation of pestiferous mosquitoes and vector-borne diseases. Every year encephalitis viruses are detected in sentinel bird flocks used in the early warning system of virus activity within California (Reeves 1990). Construction of BMPs for stormwater runoff in such an environment will provide additional habitat for mosquitoes that utilize storm drains, organically rich ponds, and wetlands, thereby enhancing the potential for disease outbreaks.

Although the BMPs are artificial structures, they will undergo natural successive changes and evolve into ecosystems that closely resemble ephemeral aquatic habitats that are characterized by cycles of drying and subsequent inundation (Souza 1984). Such an ecosystem is susceptible to disturbance from stormwater flash floods and rapid drying that result in adverse effects on aquatic populations. These adverse effects impact aquatic populations by directly causing mortality or indirectly by reducing available resources, and by increasing competitive or predatory interactions (Aspbury and Juliano 1998). To understand the complex interrelated dynamics of such an aquatic ecosystem it is necessary to monitor long-term successive changes. As a preliminary attempt to understand what interactions are expected in these ephemeral habitats, a two-year project is planned to survey the colonization and utilization of these habitats by vector species.

Since mosquitoes are pestiferous and capable of transmitting diseases of major public health importance, establishment of BMPs in urban environments for the purposes of reducing stormwater pollutants may present a substantial health risk. If these BMPs are to be adopted as a primary method of cleaning stormwater runoff, and to be built throughout the state and the nation, then the potential of health risk must be considered in the decision making process. The project objectives are to study, document, and report on the capacity of these devices to support breeding populations of mosquitoes, and to recommend procedures that may be taken to reduce this undesirable outcome. In addition to these responsibilities, it is pertinent to such an effort to document the interaction of mosquitoes and other organisms within these artificial ecosystems. The procedures and methods to achieve these goals are outlined below.

## Methods and Procedures

This project will consist of monitoring immature stages of mosquitoes and other nuisance insects. When possible, monitoring of mosquito larvae will be conducted by standard techniques. However, the habitats provided by these BMPs are diverse and will require significant effort to determine which sampling technique best provides a comparable data set that reflects mosquito abundance. Decisions to implement mosquito control will be based on the abundance of larval and pupal stages within the BMPs.

### Sampling of immature mosquitoes

When possible, larval mosquitoes will be sampled by standard dipping techniques (Service 1993). The choice of sampling technique depends on the mosquito species likely to be present, habitat type, and weather conditions. The shallow and irregular surfaces found in some of the BMPs will present further challenges in sampling mosquito larvae. For instance, in shallow water with a depth less than the height of the dipper's cup, the dipper should be held at a 45° angle and the water allowed to flow into the dipper (O'Malley 1995). Such samples will be recorded in a standard dipper equivalent. Some BMP types present special sampling challenges. For instance, the multi-chambered treatment train (MCTT) BMPs have a series of sedimentation tubes, creating an unconventional mosquito habitat and a challenge for larval sampling. The use of emergence traps, dip-nets, and perhaps other novel devices, will be necessary in some instances. Some vector control districts have already made attempts at devising sampling techniques for some BMP types. The "Kluh" dipper seems useful in sampling the outlet ditch in the MCTT but not for the chambers themselves (S. Kluh, Personal Comm). Kluh's dipper is a standard dipper cup without a handle. The cup is weighted on one side with attached strings used to collect a sample in the MCTT.

At each BMP site, the presence or absence of water will be recorded. Where standing water is present, the location, the approximate surface area, and the depth shall be noted. Three to five (3-5) dipper samples (or equivalent) will be taken around the perimeter of the standing water within the BMP. If the amount of water present is too

small to allow for a dipper sample, the use of novel devices such as “turkey basters” or aquatic pipettes (BioQuip Products, Inc., Gardena, CA) may be required; and these samples will be recorded in equivalent units of larvae per dip. The larval and pupal samples will be preserved in 80% ethanol.

Mosquito larvae in steep-sided chambers such as MCTT, media filters, or catch basins will be sampled by a “Kluh” dipper (S. Kluh, Personal Comm), dip-net, or by strainers attached to lines (Service 1993). A representative sample will be taken and the data transformed into larvae per dip equivalents. Any material caught on the net will be rinsed into a labeled sample jar or vial and then preserved in 80% ethanol.

Immature mosquito populations will be monitored at two to four week intervals. Samples will be transported to the laboratory, then removed from the preserving media, placed in gridded-petri dishes and identified using the Bohart and Washino (1978) manual. Samples will be counted and recorded according to their stages (larvae stage I-IV, Pupae); those larvae and pupae that cannot be identified to species level will be recorded at the genus level.

#### Mosquito Predator Monitoring

As BMP habitats become more stable systems, various mosquito predators may become established, forming a sustainable relationship with their mosquito and other aquatic invertebrate prey. The presence of predatory species in these BMPs does provide some control of pestiferous mosquitoes, and above all, serves as an important indicator of ecological stability. In less than ideal conditions, where BMPs may lack consistent treatment and maintenance, mosquito control may depend solely on predatory species at these habitats. The monitoring of mosquito predators at the BMP study sites provides pertinent and important data that may reflect such conditions.

The treatment of BMPs with Altosid® against mosquito breeding does not significantly affect larval stages of mosquitoes or non-target organisms such as mosquito predators. This allows for a stable larval population of mosquitoes that will eventually

sustain a dynamic population of predator species that will be correlated to mosquito production.

Although the temporary nature of some of the BMPs may not allow stability to occur, natural and artificially introduced predators, such as mosquito fish, will be monitored at all sites every two to four weeks. Several sampling techniques may be necessary to collect information that can be correlated to mosquito abundance. Minnow traps and dip-nets will be used to sample mosquito fish and invertebrate predators such as hydrophilids, notonectids, belostomatids, and others. The samples collected will be preserved, identified, and recorded into the database.

### Vegetation Sampling

A general description of plants will be employed, classifying plants as emergent or submergent flora. Algae, which are categorized as submergent plants, will be estimated by sampling and will be identified to order or family level. This and other submergent vegetation will also be sampled and identified.

Emergent vegetation in a body of standing water positively impacts larval mosquito abundance (Bailey and Gieke 1968) by providing larvae with refuge from predation and physical disturbances, and by making food resources available for mosquito larvae (Collins and Resh 1989). Standing water that contains vegetation is a particularly important habitat characteristic for several species of mosquitoes. Unlike the concrete-lined BMPs (i.e., media filters and extended detention basins), the vegetated ones (i.e., infiltration basins, wet basins, biofiltration swales and strips) may favor production of mosquitoes such as *Culex tarsalis*, *Cx. erythrothorax*, and *Aedes dorsalis* that mostly breed in habitats with vegetation (Walton and Mulla 1989). Several aspects of vegetation at the BMPs will be monitored on a bimonthly basis to assess the influence of vegetation on mosquito prevalence and production.

Measurements such as plant height, density, and percentage of vegetation cover above retained water, in addition to identifying the common species, will be documented (Southwood 1978). Plant density will be measured using 0.5 m<sup>2</sup> quadrats randomly

placed in the BMP site. The plant density will be recorded as the average percentage of vegetation cover in the quadrat.

#### Monitoring Physical and Chemical Factors

Daily weather data will be collected near the location of BMPs in Los Angeles and San Diego Counties by the California Irrigation Management Information System (CIMIS), California Department of Water Resources network. The daily maximum, minimum, and average temperatures will be recorded. Precipitation information will be monitored and recorded throughout the study period. Weather patterns that have district-wide influence, especially the occurrence of storm events, may have a direct impact on mosquito production by flushing the BMPs or providing standing water for oviposition and development of immature mosquito broods.

Water temperature has been shown to affect larval development and prevalence (Bailey and Gieke 1968, Mead and Conner 1987). When water is present, temperature, depth, pH, and concentrations of oxygen, phosphates, and nitrates will be collected on a regular basis by DHS/VBDS. Water depth will be measured by the use of a graduated stick, and then a water sample will be placed into a vial from which other water parameters will be estimated using a multi-parameter water quality meter (Hydrolab®, Ben Meadows Co. Atlanta, GA). Water quality data collected by Caltrans consultants on heavy metal (i.e., lead, zinc, and copper) concentrations and other constituents at the BMP sites will be obtained and incorporated into the database as potential factors in mosquito production.

Unusual events such as clogged drains or overflows will be documented. Such information may help provide explanations for variations in mosquito populations that otherwise would have not been associated with any of the other measured parameters.

#### Mosquito abatement practices

A threshold level of one larva or pupa per dip has been established to trigger application of larvicides at a BMP. This conservative control threshold limits the ability

to evaluate the contribution of BMP design to mosquito production. Because of this, DHS/VBDS has adopted an abatement regime that causes the least amount of disruption to the dynamics of immature mosquitoes at the BMP sites while still providing control. Larvicides with the lowest residual effect and whose mode of action deters the emergence of pupae into adults will be preferentially used.

Liquid formulation of methoprene has a residual effect of 3-5 days and mainly disrupts the pupae-adult molting stage causing minimal effect on larval stages. The downside of using this formulation of methoprene is the potential requirement for weekly applications and measurement of larvicide applied (Ross *et al.* 1994). However, other methoprene formulations such as pellets and briquets are far less ideal in these environments because of their potential to either be covered by mud or flushed out of the BMPs during storms. Methoprene (Altosid) liquid formulation will be used at all BMPs, and will be the preferred abatement product. However, the vector control districts may alter the larvicide used if a public health threat is eminent.

Other environmentally sound larvicides that may be used at the BMPs include *Bacillus thuringiensis israelensis* (Bti) and *Bacillus sphaericus*. Since these two biological agents have a longer residual effect and *B. sphaericus* has a potential to recycle (Siegel and Novak 1997), these larvicides will not be initially used.

Oil distillates are the larvicide of choice in controlling pupae. The larvicidal oils kill immature mosquitoes by suffocation (i.e., Golden Bear- GB 1111). Non-target organisms that require access to gaseous air will be impacted similarly, however GB 1111 dissipates within 36-48 hours. Its environmental impact is not well documented and it is the last choice of defense in controlling mosquito pupae and preventing adult emergence. GB 1111 is not recommended for use as a larvicide in this study, however the vector control districts may require its use.

Larvicide applications will be done by the vector control districts' certified staff; the type of larvicide, amount of water at BMP, and the quantity of larvicide per acre will be reported to DHS/VBDS. The decision to apply larvicides shall be communicated to the DHS/VBDS staff and other collaborating agencies prior to application.

### Data management and analysis

DHS/VBDS will maintain a central database of all project data. Standardized data collection forms will be circulated to all agencies and contractors for data collection. Data pertaining to larval collection will be forwarded to DHS/VBDS and added to the database. A monthly data summary (hard copy or electronic file) will be disseminated to all collaborating agencies.

If the data fulfills the assumptions of parametric statistical analyses, measures of central tendency and variation in abundance will be calculated for each BMP location. If abundance data have a non-normal distribution, non-parametric measures of central tendency and variation will be calculated. For each species of mosquito, the median number of larvae/dip and percent positive dips will be compared among the different BMP designs and sites with non-parametric statistics, specifically repeated measures ANOVA based on ranked abundance, or Kruskal-Wallis test. The number of treatments by larvicides and average larvae-free period at a particular BMP site and design will be examined as ranked data. Multivariate techniques such as principal component analysis and cluster analysis will be necessary in measuring the contributions of various parameters to mosquito abundance observed at each BMP site, especially when these data fail to meet normality tests. Data analysis will be done by DHS/VBDS in consultation with Dr. Bill Walton at the University of California, Riverside.

### Study location and site selection

A total of eleven different BMP designs at thirty-four sites are currently in operation in Los Angeles and San Diego Counties. A detailed habitat description of each BMP has previously been reported (Walton 1999). Several similarity parameters between BMPs will be used to group sites for statistical purposes. Some of the similarities between sites include the BMP construction designs, the habitat type around the BMPs, and the extent of the BMP's drainage area. These parameters will be critical in assessing differences between BMP designs. Additional factors that will be considered

in evaluating BMPs include historical records of mosquito collections and background population of adult mosquitoes.

To reach our primary objective of determining which BMP design is most effective in minimizing mosquito production, the BMP sites were divided into two categories: primary and secondary sites. Primary BMP sites (listed in Appendix A) will form the core for our comparative study while the secondary sites will provide the additional background information and serve as our controls. With cooperation from the Vector Control Districts and Caltrans, we recommend that the primary sites should receive limited or no modification during the study period. If abatement is necessary at any of the sites, Altosid® liquid will be the primary larvicide to be used. Since the data from these sites will be used for comparison across the BMP designs, the limiting of any factors that may introduce inconsistencies will enhance our ability to make stronger conclusions on their capacity to support mosquitoes. The BMP sites that will not be among our primary sites may be modified or treated, however, it is recommended that these interventions be communicated to us in a timely manner to be incorporated into the database.

### **Multi-Agency Coordination**

In addition to coordinating the surveillance and control efforts of local mosquito and vector control agencies impacted by the BMP Pilot Retrofit Program, DHS/VBDS will assure uniformity in the implementation of monitoring techniques among the local agencies. Close collaboration between VBDS and the local agencies will be a priority in the implementation of the recommended abatement practices. Consultation between the local agencies and VBDS will be necessary to achieve standard larvicidal applications across the BMP sites. It is important that local agencies communicate with VBDS on any treatment applied at any of the sites.

## **APPENDIX F: ENVIRONMENTAL/BIOLOGICAL SURVEY REPORTS**

# **CALTRANS BMP Retrofit Pilot Program Districts 7 and 11**

## **BIOLOGICAL MONITORING REPORT for September 1999**

*Prepared for:*

**Robert Bein, William Frost & Associates**

14725 Alton Parkway

Irvine, CA 92619

Contact: Mr. Trevor Smith

(949) 472-3505

*Prepared by:*



*Professional Teams for Complex Projects*

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# Monitoring Report • Caltrans BMP Retrofit Pilot Program

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# Monitoring Report • Caltrans BMP Retrofit Pilot Program

## INTRODUCTION

This report is intended to describe biological monitoring efforts with regard to the California Department of Transportation (Caltrans) Best Management Practices facilities (BMP) pilot study occurring in Districts 7 and 11 (Los Angeles and San Diego respectively). The pilot study, BMP locations, and BMP descriptions have been well described previously by Robert Bein, William Frost and Associates (RBF 1999).

Seven District 7 BMP sites (*Figure 1*) and nine District 11 BMP sites (*Figure 2*) are monitored monthly by Dudek and Associates, Inc. (DUDEK). DUDEK previously determined that the 16 sites may have the potential to become significant from a wildlife perspective. DUDEK Wildlife biologist Brock A. Ortega visited the District 11 BMPs and District 7 BMP's on 29 and 30 September 1999 respectively. Survey conditions on both days were appropriate for detection of wildlife (i.e., clear skies, mild temperatures, light breezes).

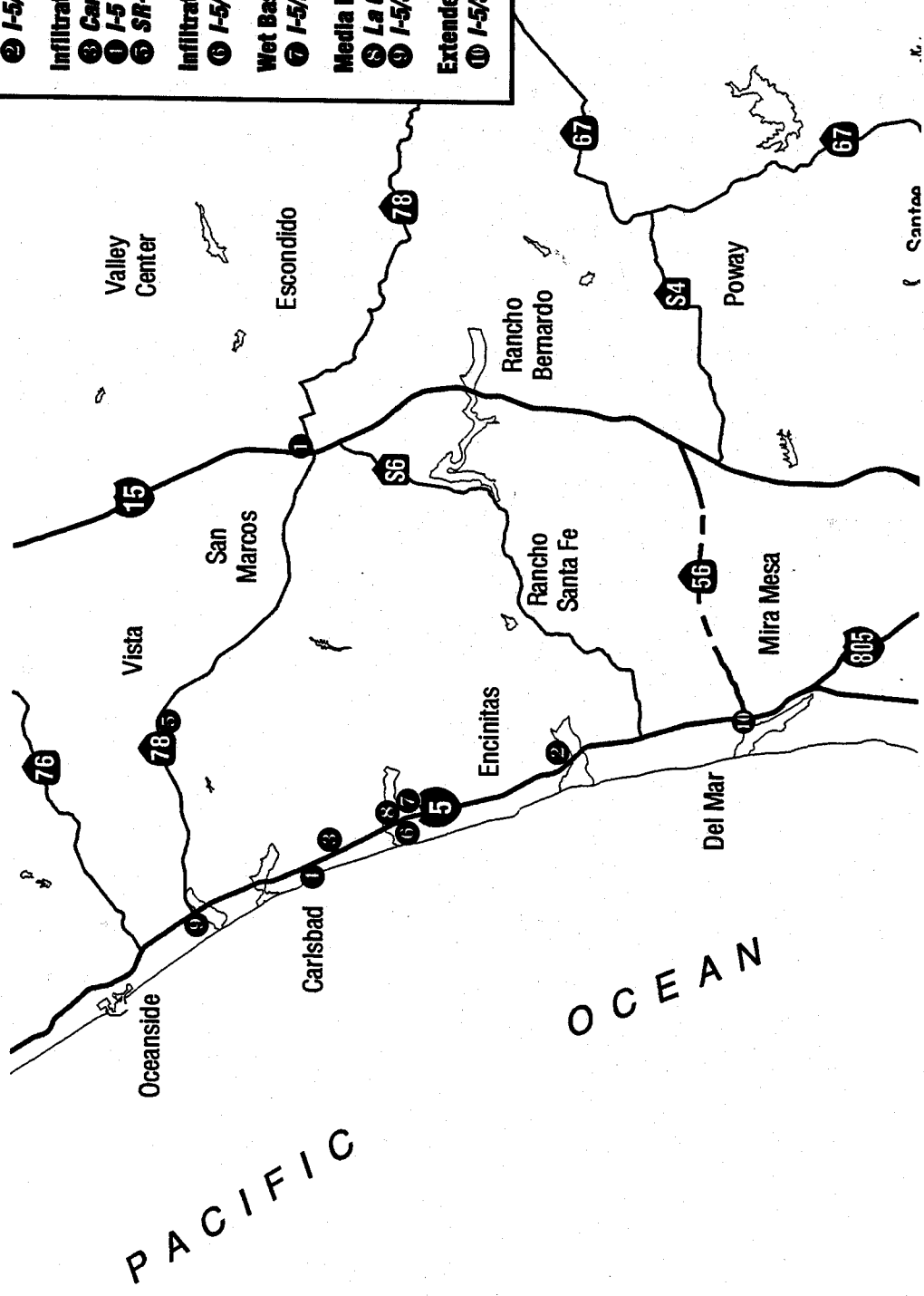
*Table 1* presents a synopsis of potential issues related to each BMP site. A discussion of each BMP site follows the table.

**TABLE 1**  
**BMP LOCATIONS, TYPE, POTENTIAL BIOLOGICAL ISSUES**  
**AND SUMMARY OF FINDINGS**

Location; BMP Type	Sensitive Species Activity/Type	Action	Gopher Mounds/ Action*	Ground Squirrel Holes/ Action*	Nesting Birds	Standing Water	Species Observed
I-605/SR-91; InfBa	No	N/A	Yes/None	No	No	No	European starling, killdeer
I-5/I-605; ExtDB	No	N/A	Yes/None	No	No	Yes	Cabbage white, skipper, red tailed hawk, mourning dove
I-605/SR-91; BiofSt	No	N/A	No	No	No	No	None
Cerritos MS; BiofSw	No	N/A	Yes/trap	Adjacent/Watch for invasion	No	No	Skipper, side-blotched lizard, mourning dove
I-5/I605; BiofSw	No	N/A	Yes/None	No	No	No	Mourning dove, skipper
I-605/SR-91; BiofSw	No	N/A	Yes/trap	No	No	No	Side-blotched lizard, killdeer, Botta's pocket gopher
I-5/Manchester; ExtDB	No	N/A	No	No	No	No	House finch, Mourning dove, osprey, red-tailed hawk, alfalfa butterfly
I-5/SR-56; ExtDB	No	N/A	No	No	No	Yes	House finch, Mourning dove, Western fence lizard, Brush rabbit,
I-15/SR-78; ExtDB	No	N/A	Yes	Yes/Collapse holes	No	No	Side-blotched lizard, coyote scat, western fence lizard



- Extended Detention Basin:**
- ① SR-78/I-15
  - ② I-5/Manchester Avenue (east)
- Infiltration Trench/Biofilter (strip/swale):**
- ③ Carlsbad MS
  - ④ I-5 (south)/Palomar Airport Road
  - ⑤ SR-78 (east)/Melrose Drive Exit
- Infiltration Basin:**
- ⑥ I-5/La Costa Avenue (northwest)
- Wet Basin:**
- ⑦ I-5/La Costa Avenue (southeast)
- Media Filter:**
- ⑧ La Costa P&R
  - ⑨ I-5/SR-78 Interchange P&R
- Extended Detention Basin:**
- ⑩ I-5/SR-56 Interchange



1" = 5 Miles

**FIGURE 2**

**Caltrans BMP Retrofit Pilot Program, LA & SD Counties - Biological Monitoring Report**  
**Regional Location Map - District 11, San Diego**

# Monitoring Report • Caltrans BMP Retrofit Pilot Program

**TABLE 1 (Continued)**  
**BMP LOCATIONS, TYPE AND POTENTIAL BIOLOGICAL ISSUES**

Location; BMP Type	Sensitive Species Activity/Type	Action	Gopher Mounds/ Action*	Ground Squirrel Holes/ Action*	Nesting Birds	Standing Water	Species Observed
I-5/La Costa W; InfBa	No	N/A	No	No	No	No	Killdeer, Bushtit, western fence lizard
I-5/La Costa SE; WetBa	No	N/A	No	No	No	Yes	Mourning dove, mallard, black phoebe, sharp-shinned hawk, American kestrel
SR-78/Melrose; BiofSw	No	N/A	Yes/None	No	No	No	Meadow vole, Western fence lizard, side-blotched lizard
I-5/Palomar Airport; BiofSw	No	N/A	Yes/None	No	No	No	Alfalfa butterfly, Side-blotched lizard
I-5/LaCosta P&R; MedFi	No	N/A	No	No	No	Yes	Western fence lizard
I-5/SR-78 P&R; MedFi	No	N/A	No	No	No	No	--

InfBa - Infiltration Basin  
 ExtDB - Extended Detention Basin  
 BiofSw - Biofiltration Swale  
 BiofSt - Biofiltration Strip  
 WetBa - Wet Basin  
 MedFi - Media Filter

\* Action needed to protect against potential sensitive species occupation – does not account for any actions required to protect site from herbivory, erosion, or other problems caused by fossorial mammals.

## DISTRICT 7 (LOS ANGELES) BMP SITES

### 605/91 Interchange Extended Detention Basin

The basin had a few gopher burrows along at the upstream end and along the perimeter. No ground squirrel holes were evident. No standing water was present. No sensitive species were present or expected.

The only recommendation is to watch for increased gopher activity.

### 605/91 Interchange Biofiltration Swale

The swale showed signs of fresh gopher activity, particularly at the downstream end. An abundant amount of gopher activity was evident surrounding the BMP. Adjacent vegetation had recently been trimmed according to the OMM plan. Grass within the BMP was lush.

## **Monitoring Report • Caltrans BMP Retrofit Pilot Program**

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It is recommended that gopher trapping continue, strictly to reduce herbivory, gophers are not expected to create sensitive species habitat.

### **605/91 Interchange Biofiltration Strip**

Gopher activity appears to have ceased. The grass looks to be in good shape with the exception of the newly planted area which is overrun by weedy material. Vegetation adjacent to the BMP (background) has recently been trimmed.

There are no recommendations at this time.

### **605/91 Interchange Infiltration Basin**

There is abundant gopher activity present within the basin. An increase in ground squirrel burrows are evident around the perimeter of the BMP, both inside and outside the BMP. All vegetation within the BMP has been trimmed along with the adjacent vegetation outside the BMP.

There are no maintenance recommendations at this time. However, it is recommended that the ground squirrel activity will be closely watched and burrows closed as encountered. If the problem gets worse then control methods will be recommended.

### **5/605 Interchange Extended Detention Basin**

Gopher mounds were present along the slopes adjacent to the BMP, however these are not anticipated to be of concern. California encelia and other shrubs within the BMP, adjacent to the basin, are large.

It is recommended that the vegetation within the BMP perimeter be trimmed according to the OMM plan. No gopher control actions are recommended.

### **5/605 Interchange Biofiltration Swale**

Gopher mounds were present adjacent to the lower half of the swale. However, no recent gopher activity was evident within the BMP. No ground squirrel burrows were present. The grass appears to be thriving.

It is recommended that the ice plant be eliminated before it gains a substantial hold.

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### **Cerritos Maintenance Station/91 Biofiltration Swale**

There still are gopher mounds distributed at the upstream end and along the perimeter. The grass is lush and vigorous. Abundant reptile life is present at this and the other 91/605 BMPs.

Gopher trapping should occur/continue to minimize the amount of herbivory on the grass filter. As stated previously, gopher mounds are not expected to create sensitive species habitat.

## **DISTRICT 11 (SAN DIEGO) BMP SITES**

### **5/56 Interchange Extended Detention Basin**

No gopher mounds or ground squirrel burrows were detected. Shrubs at the south end have been trimmed. Water was present at the inlet and adjacent to access road and freeway.

It is recommended that the standing water is removed and that the invading plants at the southern edge are trimmed in accordance with the OMM plan.

### **5/Manchester Avenue Extended Detention Basin**

No ground squirrel or pocket gopher activity was evident. There are no sensitive species issues at this time.

There are no recommendations at this time.

### **5/La Costa Avenue Wet Basin**

There were no gopher mounds or ground squirrel burrows in or in the vicinity of the BMP. There are still some standing water puddles adjacent to the basin. Otherwise, the BMP looks very good. There are no sensitive species issues at this time.

### **La Costa Park and Ride Media Filter**

There was some standing water within the media filter with invertebrates present. There are no recommendations.

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### **5/La Costa Avenue Infiltration Basin**

There were no gopher mounds or ground squirrel burrows detected. The standing water has nearly completely been absorbed or evaporated.

There are no recommendations at this time.

### **5/Palomar Airport Road Biofiltration Swale**

There were a couple gopher mounds adjacent to the northern end. No ground squirrel burrows were detected. The filter grass is lush.

It is recommended that no trapping be conducted at this time.

### **78/Melrose Drive Biofiltration Swale**

Only one ground squirrel burrow and a few gopher mounds were detected. The filter grass was lush but appeared to have stopped growing for the year. Wood material used to form the new structures was piled up to one side. This should be removed to prevent herptile (reptiles and amphibians) harborage.

It is recommended that the ground squirrel burrows are compacted shut and future activity watched.

### **78/15 Extended Detention Basin**

There was an increase in ground squirrel activity adjacent to the blacktop access road which leads into the basin. Abundant ground squirrel and gopher activity is present adjacent to the BMP on slopes. Vegetation within and adjacent to the BMP had been trimmed.

It is recommended that bait stations are applied near the interior ground squirrels and that the burrows are compacted closed.

### **5/78 Media Filter**

There were no issues at the media filter. There are no recommendations.

## **COMMENTS**

# **CALTRANS BMP Retrofit Pilot Program Districts 7 and 11**

## **BIOLOGICAL MONITORING REPORT for October 1999**

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# Monitoring Report • Caltrans BMP Retrofit Pilot Program

## INTRODUCTION

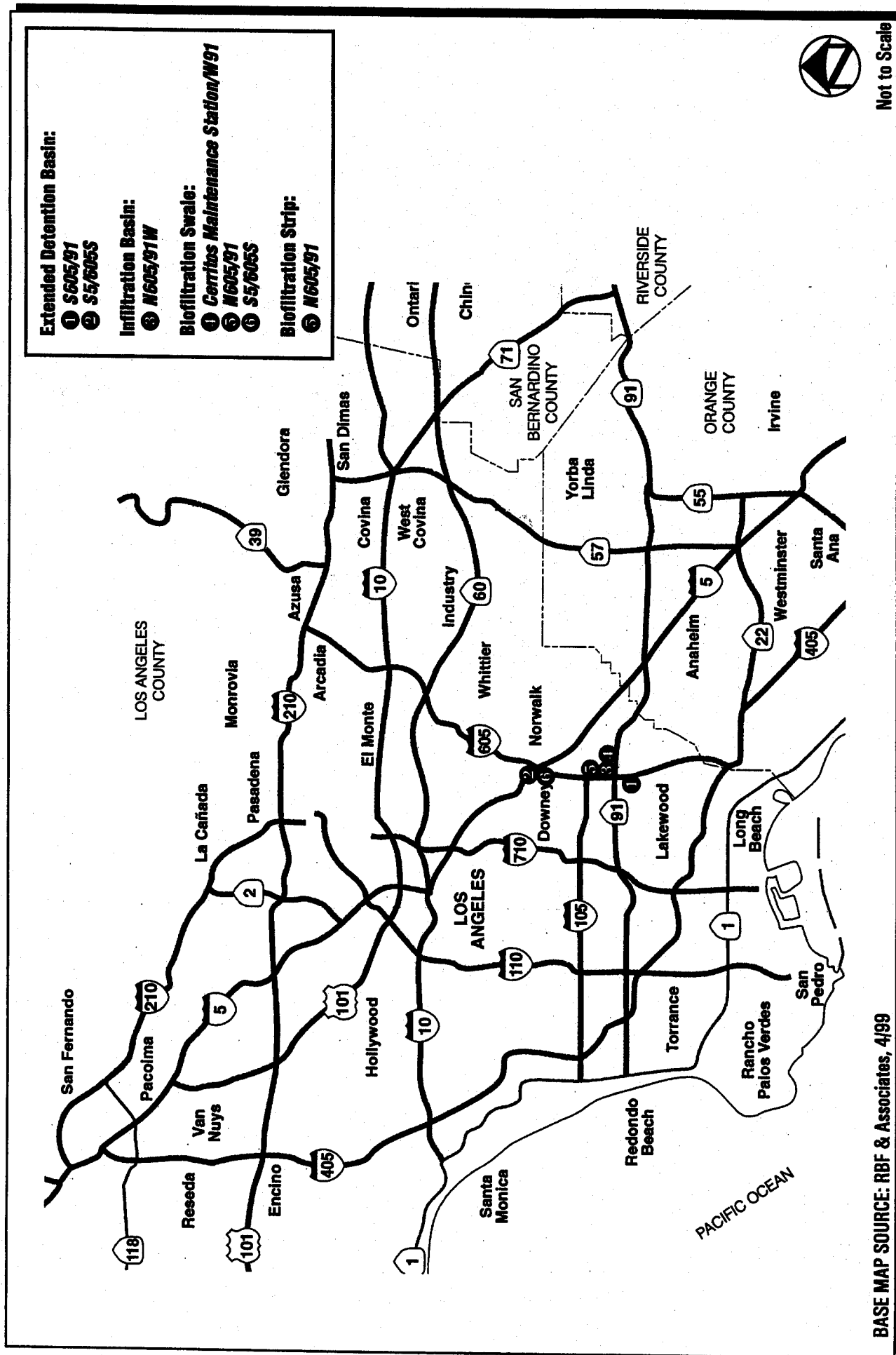
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Seven District 7 BMP sites (*Figure 1*) and nine District 11 BMP sites (*Figure 2*) are monitored monthly by Dudek and Associates, Inc. (DUDEK). DUDEK previously determined that the 16 sites may have the potential to become significant from a wildlife perspective. DUDEK Wildlife biologist Brock A. Ortega visited the District 11 BMPs and District 7 BMP's on 22 and 26 October 1999 respectively. Survey conditions on both days were appropriate for detection of wildlife (i.e., clear skies, mild temperatures, light breezes).

*Table 1* presents a synopsis of potential issues related to each BMP site. A discussion of each BMP site follows the table.

**TABLE 1**  
**BMP LOCATIONS, TYPE, POTENTIAL BIOLOGICAL ISSUES**  
**AND SUMMARY OF FINDINGS**

Location; BMP Type	Sensitive Species Activity/Type	Action	Gopher Mounds/ Action *	Ground Squirrel Holes/ Action *	Nesting Birds	Standing Water	Species Observed
I-605/SR-91; InfBa	No	N/A	Yes/None	No	No	No	killdeer
I-5/I-605; ExtDB	No	N/A	Yes/None	No	No	Yes	house finch
I-605/SR-91; BiofSt	No	N/A	No	No	No	No	None
Cerritos MS; BiofSw	No	N/A	Yes/trap	Adjacent/Watch for invasion	No	No	western fence lizard
I-5/I-605; BiofSw	No	N/A	Yes/None	No	No	No	Mourning dove, common rover
I-605/SR-91; BiofSw	No	N/A	Yes/trap	No	No	No	skipper
I-5/Manchester; ExtDB	No	N/A	No	No	No	No	None
I-5/SR-56; ExtDB	No	N/A	No	No	No	Yes	Common raven, black phoebe, great-blue heron, Brush rabbit,
I-15/SR-78; ExtDB	No	N/A	Yes	Yes/Collapse holes	No	No	Side-blotched lizard, killdeer, yellow-rumped warbler, western fence lizard





# Monitoring Report • Caltrans BMP Retrofit Pilot Program

**TABLE 1 (Continued)**  
**BMP LOCATIONS, TYPE AND POTENTIAL BIOLOGICAL ISSUES**

Location; BMP Type	Sensitive Species Activity/Type	Action	Gopher Mounds/ Action*	Ground Squirrel Holes/ Action*	Nesting Birds	Standing Water	Species Observed
I-5/La Costa W; InfBa	No	N/A	No	No	No	No	Killdeer, Bushtit
I-5/La Costa SE; WetBa	No	N/A	No	No	No	Yes	Mourning dove, mallard, black phoebe, yellow-rumped warbler, marsh wren, gadwall, bushtit, great egret, red-billed grebe, American coot, song sparrow
SR-78/Melrose; BiofSw	No	N/A	Yes/None	No	No	No	Western fence lizard, black phoebe
I-5/Palomar Airport; BiofSw	No	N/A	Yes/None	Yes/None	No	No	Side-blotched lizard
I-5/LaCosta P&R; MedFi	No	N/A	No	No	No	Yes	--
I-5/SR-78 P&R; MedFi	No	N/A	No	No	No	No	--

InfBa - Infiltration Basin  
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\* Action needed to protect against potential sensitive species occupation – does not account for any actions required to protect site from herbivory, erosion, or other problems caused by fossorial mammals.

## DISTRICT 7 (LOS ANGELES) BMP SITES

### 605/91 Interchange Extended Detention Basin

No gopher burrows were evident within the BMP. No ground squirrel hole were evident. No standing water was present. No sensitive species were present or expected.

There are no recommendations at this time.

### 605/91 Interchange Biofiltration Swale

Gopher burrows were evident within the BMP at he outlet. Additionally, an abundant amount of gopher activity was evident surrounding the BMP. No ground squirrel burrows were evident. No standing water was present. No sensitive species were present or expected. Grass within the BMP was lush.

There are no recommendations at this time, except to watch for increased gopher activity.

## **Monitoring Report • Caltrans BMP Retrofit Pilot Program**

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### **605/91 Interchange Biofiltration Strip**

Gopher activity appears to have ceased. The grass looks to be in good shape with the exception of the newly planted area. The adjacent areas are well maintained but gopher activity is present and should be watched closely. No ground squirrel burrows were evident within the BMP. No standing water was present. No sensitive species were detected or expected.

There are no recommendations at this time.

### **605/91 Interchange Infiltration Basin**

There is abundant gopher activity present within the basin. An increase in ground squirrel burrows are evident around the perimeter of the BMP adjacent to the access road. There is no standing water present. No sensitive species were detected or expected.

There are no maintenance recommendations at this time. However, it is recommended that the ground squirrel activity will be closely watched and burrows closed as encountered. If the problem gets worse, then control methods will be recommended.

### **5/605 Interchange Extended Detention Basin**

No gopher or ground squirrel burrows were evident within the BMP. No standing water was evident. No sensitive species were detected or expected.

There are no recommendations at this time.

### **5/605 Interchange Biofiltration Swale**

No gopher or ground squirrel burrows were present. No standing water was present. No sensitive species were detected or expected. The grass appears to be thriving.

There are no recommendations at this time.

### **Cerritos Maintenance Station/91 Biofiltration Swale**

There still are gopher mounds distributed throughout the BMP. No ground squirrel burrows were evident within the BMP. No standing water was present. No sensitive species were detected or expected. The grass is lush and vigorous. Abundant reptile life is present at this and the other 91/605 BMPs.

## **Monitoring Report • Caltrans BMP Retrofit Pilot Program**

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Gopher trapping should occur/continue to minimize the amount of herbivory on the grass filter. However, gopher mounds are not expected to create sensitive species habitat.

### **DISTRICT 11 (SAN DIEGO) BMP SITES**

#### **5/56 Interchange Extended Detention Basin**

No gopher mounds or ground squirrel burrows were detected. Shrubs at the south end have been trimmed. Water with invertebrates was present at the inlet. No sensitive species were detected or expected.

It is recommended that the standing water is removed.

#### **5/Manchester Avenue Extended Detention Basin**

No ground squirrel or pocket gopher activity was evident. No standing water was present. There are no sensitive species issues at this time.

There are no recommendations at this time.

#### **5/La Costa Avenue Wet Basin**

There were no gopher mounds or ground squirrel burrows in or in the vicinity of the BMP. Standing water puddles are adjacent to the basin between it and the overflow channel. There are no sensitive species issues at this time. Many wetland wildlife species are now utilizing the site. Emergent wetland vegetation now approximates 10% of the total barren surface area.

There are no recommendations at this time.

#### **La Costa Avenue Media Filter**

There are no issues at the media filter at this time. There are no recommendations.

#### **5/La Costa Avenue Infiltration Basin**

There were no gopher mounds or ground squirrel burrows detected. The standing water has completely been absorbed or evaporated. No sensitive species were detected or expected at this time.

There are no recommendations at this time.

# **Monitoring Report • Caltrans BMP Retrofit Pilot Program**

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## **5/Palomar Airport Road Biofiltration Swale**

There were a couple gopher mounds distributed throughout. Ground squirrel burrows were present adjacent to the right-of-way fence. The filter grass is lush.

It is recommended that no trapping be conducted at this time, but baiting for ground squirrels is conducted.

## **78/Melrose Drive Biofiltration Swale**

Only a few gopher mounds were detected. The filter grass was lush but appeared to have stopped growing for the year. No ground squirrel burrows were present. No standing water was present. No sensitive species were present.

There are no recommendations at this time.

## **78/15 Extended Detention Basin**

Ground squirrel activity still is increasing adjacent to the blacktop access road which leads into the basin. Abundant ground squirrel and gopher activity is present adjacent to the BMP on slopes. No standing water is present. No sensitive species were detected.

It is recommended that bait stations are applied near the interior ground squirrels and that the burrows are compacted closed.

## **5/78 Media Filter**

There were no issues at the media filter. There are no recommendations.

## **COMMENTS**

Gopher and ground squirrel activity is still more prevalent in District 7; however, the District 11 – 5/Palomar and 78/15 BMPs are becoming a concern. Gopher activity should not create habitat for sensitive species, however where they occur within grass filter BMPs, they should be trapped to reduce herbivory.

California ground squirrel burrows should be collapsed as they are found and persistent or increasing populations should be poisoned via bait stations.

Presently, nesting birds will not constrain maintenance activities, nor will sensitive species.

## Monitoring Report • Caltrans BMP Retrofit Pilot Program

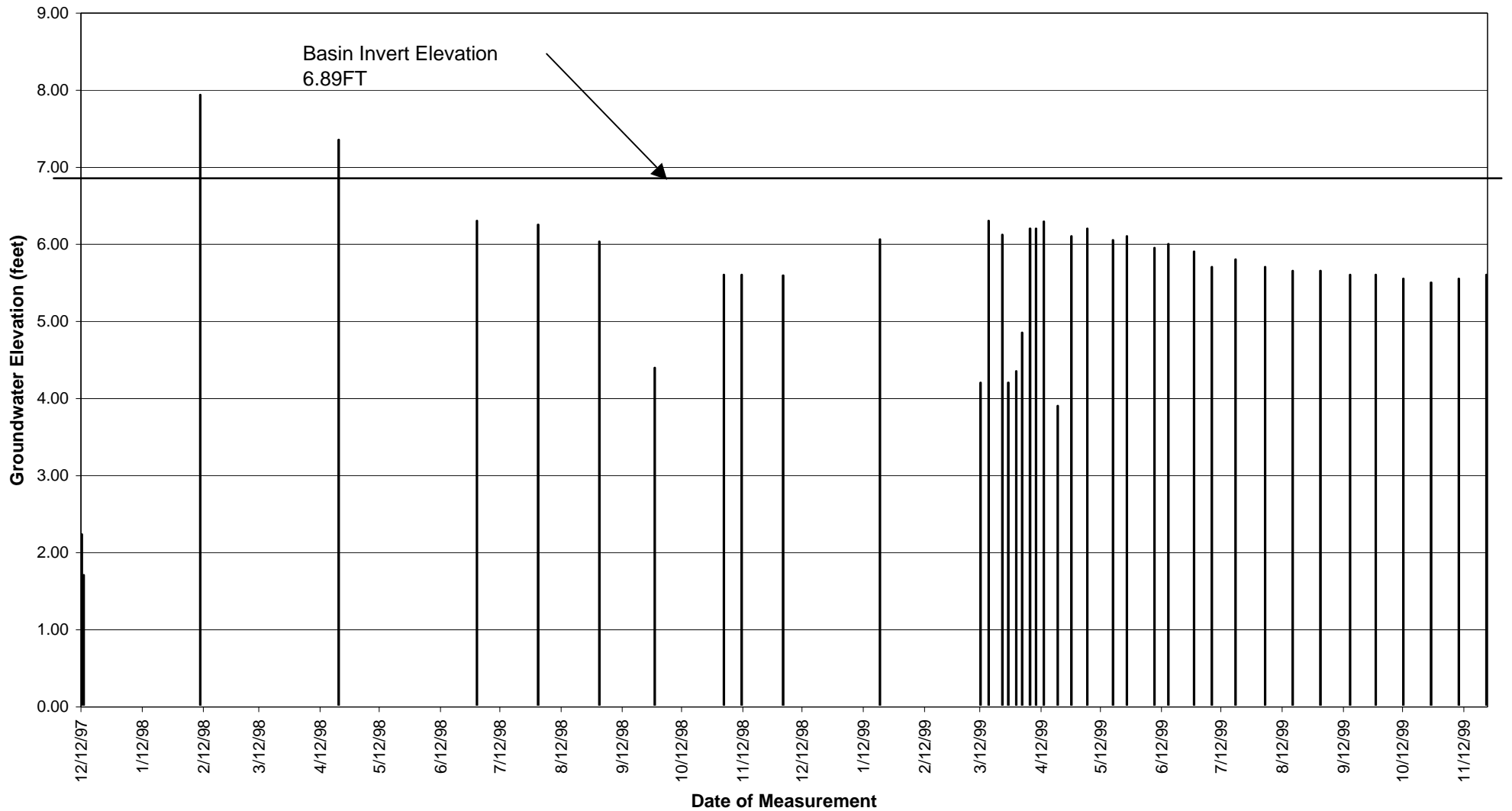
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### LITERATURE CITED

Robert Bein, William Frost and Associates. 1999. Project Information for Selected Best Management Practice (BMP) Sites in Caltrans Districts 7 and 11. 27pp.

**APPENDIX G: LA COSTA INFILTRATION BASIN GROUNDWATER LOG**

## Groundwater Level Monitoring at I-5/La Costa Infiltration Basin Site



**BMP RETROFIT PILOT PROGRAM  
PS&E LOCATION 3  
I-5/LA COSTA AVE INFILTRATION BASIN**

**TABLE 1  
WATER SURFACE ELEVATION SUMMARY SHEET**

Date	Time	Field Reading		Pond Depth <sup>+</sup> (FT)	Groundwater Elev (FT) <sup>+</sup>	Delta (FT)	By
		Headwall (FT)	Monitoring Well (FT)				
12/12/97	---	---	BORING WW-1	---	2.22	4.67	GDC
12/13/97	---	---	BORING WW-2	---	1.69	5.20	GDC
12/23/97	---	---	---	---	No groundwater encountered.	---	GDC
2/10/98	---	---	3.00	---	7.92	-1.03	GDC
4/21/98	---	---	5.85	---	7.34	-0.45	GDC
6/30/98	10:00am	---	6.90	---	6.29	0.60	KLI
7/31/98	4:15pm	---	6.95	---	6.24	0.65	KLI
8/31/98	11:57am	---	7.17	---	6.02	0.87	KLI
9/28/98	---	---	---	---	4.38	---	RBF
11/2/98	4:04pm	---	7.60	---	5.59	1.30	KLI
11/11/98	4:55pm	---	7.60	---	5.59	1.30	KLI
12/2/98	---	---	7.61	---	5.58	1.31	KLI
12/17/98	---	---	---	---	0.00	---	CT RE
1/20/99	7:05am	---	7.14	---	6.05	0.84	GDC
2/24/99	10:15am	2.08	---	---	---	---	GC
3/2/99	2:00pm	1.88	---	---	---	---	AW
3/9/99	11:00am	1.73	---	---	---	---	GC
3/12/99	1:00pm	1.86	9.00	1.45	4.19	2.70	AW
3/16/99	4:55pm	1.98	6.90	1.57	6.29	0.60	AW
3/23/99	10:00am	1.76	7.08	1.35	6.11	0.78	AW
3/26/99	10:20am	2.48	9.00	2.07	4.19	2.70	AW
3/30/99	9:05am	2.28	8.85	1.87	4.34	2.55	AW
4/2/99	8:15am	2.89	8.35	2.48	4.84	2.05	AW
4/6/99	2:00pm	2.69	7.00	2.28	6.19	0.70	AW
4/9/99	10:00am	2.67	7.00	2.26	6.19	0.70	AW
4/13/99	10:00am	2.89	6.91	2.48	6.28	0.61	AW
4/20/99	9:50am	2.52	9.30	2.11	3.89	3.00	AW
4/27/99	2:25pm	2.50	7.10	2.09	6.09	0.80	AW
5/5/99	1:10pm	2.06	7.00	1.65	6.19	0.70	AW
5/18/99	5:55pm	1.66	7.15	1.25	6.04	0.85	AW

**BMP RETROFIT PILOT PROGRAM  
PS&E LOCATION 3  
I-5/LA COSTA AVE INFILTRATION BASIN**

**TABLE 1  
WATER SURFACE ELEVATION SUMMARY SHEET**

Date	Time	Field Reading		Pond Depth <sup>*</sup> (FT)	Groundwater Elev (FT) <sup>*</sup>	Delta (FT)	By
		Headwall (FT)	Monitoring Well (FT)				
5/25/99	5:40pm	1.50	7.10	1.09	6.09	0.80	AW
6/8/99	5:40pm	1.30	7.25	0.89	5.94	0.95	AW
6/15/99	1:45pm	1.10	7.20	0.69	5.99	0.90	AW
6/28/99	1:50pm	0.82	7.30	0.41	5.89	1.00	AW
7/7/99	12:45pm	0.62	7.50	0.21	5.69	1.20	AW
7/19/99	10:30am	0.43	7.40	0.02	5.79	1.10	AW
8/3/99	11:45am	0.22	7.50	-0.19	5.69	1.20	AW
8/17/99	10:50am	0.12	7.55	-0.29	5.64	1.25	AW
8/31/99	9:50am	0.12	7.55	-0.29	5.64	1.25	AW
9/15/99	11:45am	-0.26	7.60	-0.67	5.59	1.30	AW
9/28/99	11:55am	0.08	7.60	-0.33	5.59	1.30	AW
10/12/99	10:05am	0.08	7.65	-0.33	5.54	1.35	AW
10/26/99	3:00pm	0.08	7.70	-0.33	5.49	1.40	AW
11/9/99	2:35pm	0.08	7.65	-0.33	5.54	1.35	AW
11/23/99	4:05pm	No standing water.	7.60	No standing water.	5.59	1.30	FP

\*

**Temporary Well:** Well Cover elevation 10.99 ft (3.35m). Well rim elevation 10.92 ft.

WSE at monitoring well = Well cover elevation (FT) - Monitoring Well Reading (FT)

**BMP RETROFIT PILOT PROGRAM  
PS&E LOCATION 3  
I-5/LA COSTA AVE INFILTRATION BASIN**

**TABLE 1  
WATER SURFACE ELEVATION SUMMARY SHEET**

Date	Time	Field Reading		Pond Depth <sup>*</sup> (FT)	Groundwater Elev (FT) <sup>†</sup>	Delta (FT)	By
		Headwall (FT)	Monitoring Well (FT)				

\*

**Permanent Well:** Monitoring well notch at elevation 13.186 ft (4.02m)

WSE at monitoring well = Notch elevation (FT) - Monitoring Well Reading (FT)

Monitoring Well reading = Distance to groundwater surface

\*

**Pond Depth** = Headwall Field Reading (FT) - Pipe Invert Location on the Headwall Gauge (FT)

Pipe Invert Location on the Headwall Gauge (FT) = 0.41 ft

Note: Negative Pond Depths indicate ponded water is below invert.

This is due to scour and settlement of the invert material.

**Delta** = Basin Invert - Groundwater elevation

**Basin Invert = 6.89 FT** (2.1m)

AW- RBF

FP- RBF

GC- RBF

GDC-Group Delta Consultants (Formerly LKR- The LKR Group, Consulting Geotechnical Engineers)

KLI- Kinnetic Laboratories, Inc.

CT RE- Caltrans Resident Engineer

## **APPENDIX H: PROJECT CALENDAR**

# November 1999

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday																																																																																											
	1 Final OMM Plan Due	2 Bi-weekly Report Due	3	4 10:00 AM-Bi Weekly Conference Call--Bob Wu, Rich Horner, Chris May, Rich Graff, RBF, Jeremy Johnstone	5	6																																																																																											
7	8	9	10	11	12	13																																																																																											
14	15	16 Bi-weekly Report Due	17	18 10:00 AM-Bi Weekly Conference Call--Bob Wu, Rich Horner, Chris May, Rich Graff, RBF, Jeremy Johnstone	19	20																																																																																											
21	22	23	24	25 HOLIDAY	26 HOLIDAY	27																																																																																											
28	29	30	<div>Oct 1999</div> <table> <tr><td>S</td><td>M</td><td>T</td><td>W</td><td>T</td><td>F</td><td>S</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td>1</td><td>2</td></tr> <tr><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td></tr> <tr><td>10</td><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td></tr> <tr><td>17</td><td>18</td><td>19</td><td>20</td><td>21</td><td>22</td><td>23</td></tr> <tr><td>24</td><td>25</td><td>26</td><td>27</td><td>28</td><td>29</td><td>30</td></tr> <tr><td>31</td><td></td><td></td><td></td><td></td><td></td><td></td></tr> </table> <div>Dec 1999</div> <table> <tr><td>S</td><td>M</td><td>T</td><td>W</td><td>T</td><td>F</td><td>S</td></tr> <tr><td></td><td></td><td></td><td></td><td>1</td><td>2</td><td>3</td></tr> <tr><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr> <tr><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td></tr> <tr><td>18</td><td>19</td><td>20</td><td>21</td><td>22</td><td>23</td><td>24</td></tr> <tr><td>25</td><td>26</td><td>27</td><td>28</td><td>29</td><td>30</td><td>31</td></tr> </table>				S	M	T	W	T	F	S						1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31							S	M	T	W	T	F	S					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
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<b>16</b>	Bi-weekly Report Due
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<b>25</b>	HOLIDAY
<b>26</b>	HOLIDAY

# December 1999

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**December**

**1**

Quarterly Status Report Due

**15**

9:00 am Status Meeting No. 7 at RBF, Irvine Office

# January 2000

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